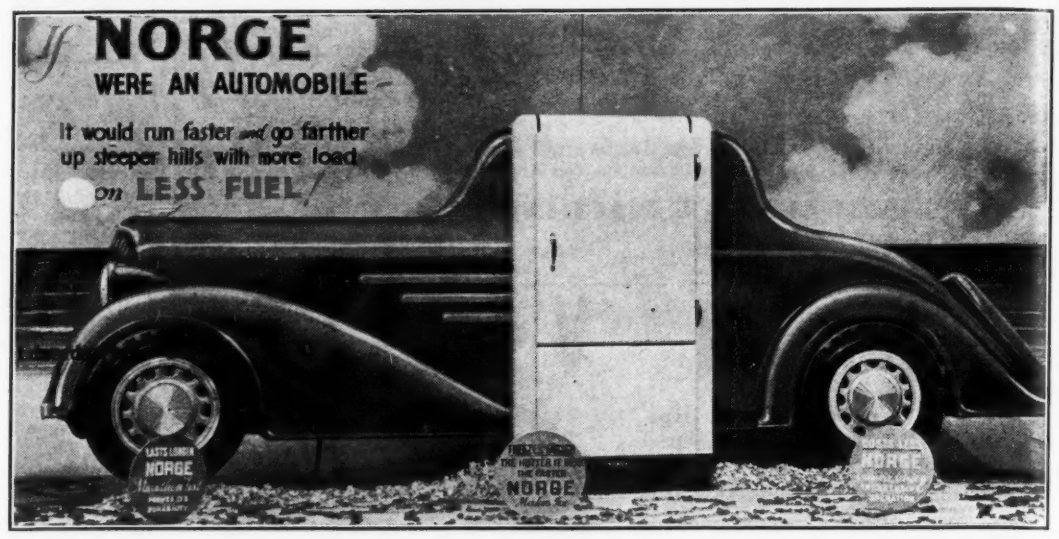
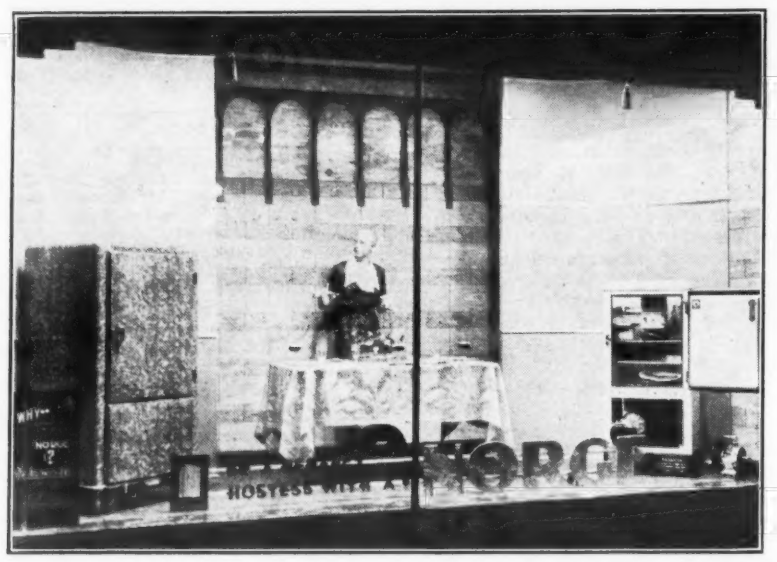
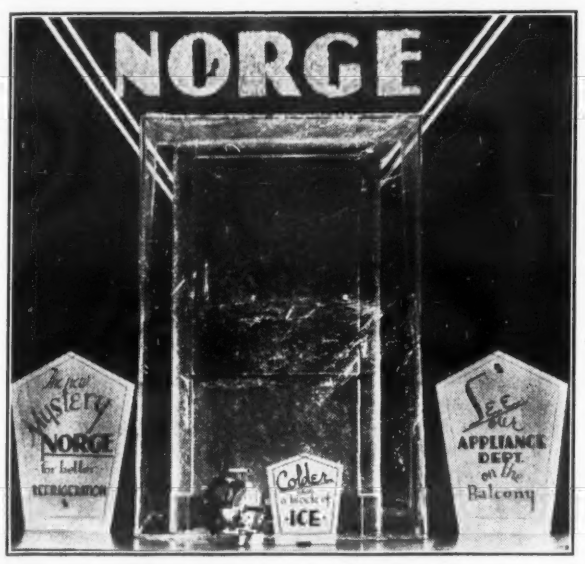
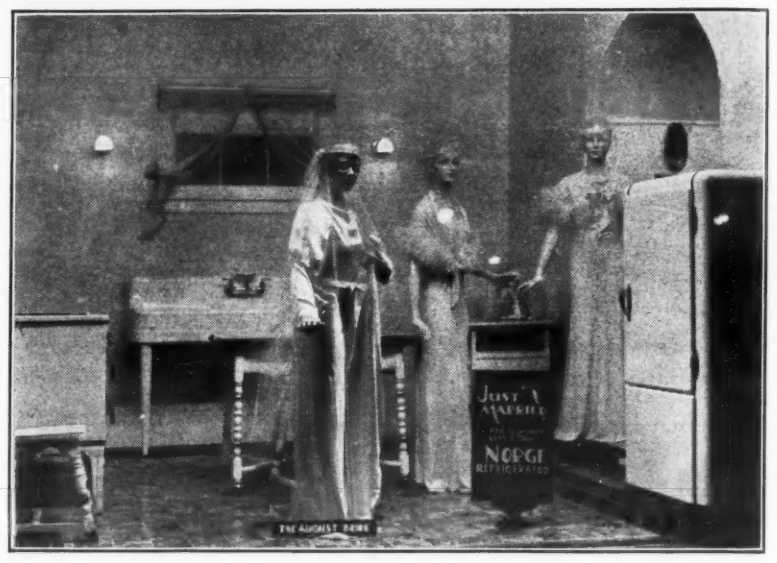
Winners in Norge Window Display Contest for Dealers



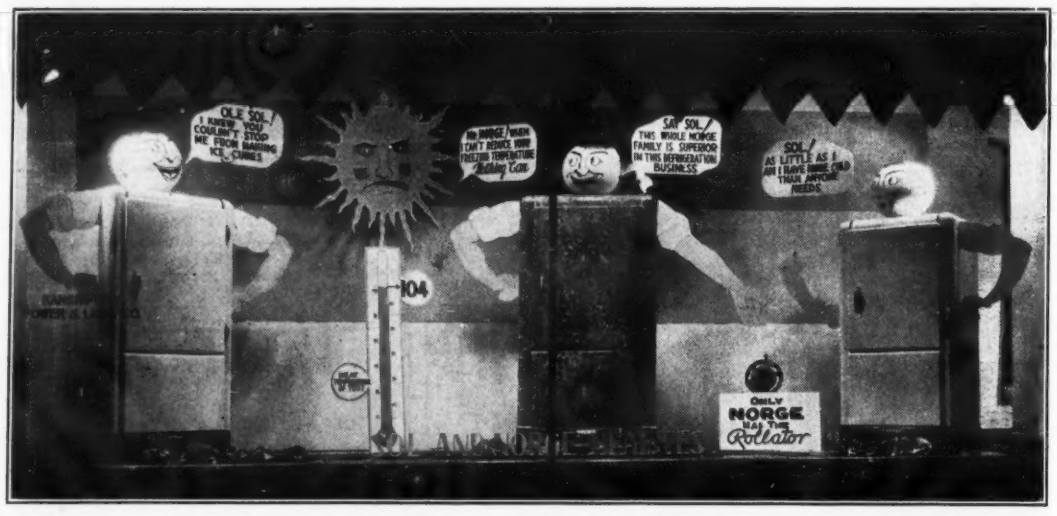
(1) The big Jones Store of Kansas City, Mo., took seventh prize with this display in which a grinning Norge snubs the summer heat. (2) Window dressers of the Edwards Piano Co. in Jacksonville, Fla., carried off the second prize of $250 with this exhibit, wherein a Norge sales talk is couched in automotive terms. The picture of first prize winner will be published later.







(1) "Be a perfect hostess with a Norge" was the theme of the window used by the Barnes Woodin Co., Yakima, Wash. It drew sixth prize. (2) Clever combination of plate glass, cellophane, and a Norge mystery model won third prize for the Levy Bros. department store in Burlingame, Calif. (3) Norge for the newlyweds was the keynote used by Buffalo's A. Victor & Co., fourth prize.


OLE SOL! I NEVER YOU COULDN'T STOP ME FROM MAKING ICE CUBES
NO NORGE WISH I CAN'T REDUCE YOUR FREEZING TEMPERATURE Nothing Can
SAY SOL! THIS WHOLE NORGE FAMILY IS SUPERIOR IN THIS REFRIGERATION BUSINESS
SOL AS LITTLE AS I AM I HAVE MORE COLD THAN ANYONE NEEDS
104
ONLY NORGE HAS The Rollator

(1) Another Kansas City outlet—Kansas City Power & Light Co.—also capitalized on that city's terrific late-summer heat and won fifth award with its display of Norges merrily heckling sullen old Sol. (2) Starring several Norge features and highlighting the thrift appeal, this conservative exhibit took eighth prize for the American Avenue Hardware Co. of Long Beach, Calif.

Compressor for Fairbanks-Morse 1935 Line Designed without Piston Rings

(Concluded from Page 1, Column 5)

that Fairbanks-Morse would pursue its time-honored policy of conservative merchandising. Example: No quotas will be set for distributors.

Also on the program were Col. Robert H. Morse, president, S. T. Kiddoo, vice president, and W. T. Watt, advertising manager of Fairbanks-Morse; Mortimer Frankel, vice president and general manager of Fairbanks-Morse Home Appliances, Karl Schmidt, refrigeration engineer, John W. Million, radio sales department, L. M. Decker, home laundry department, Prof. Fred E. Clark of Northwestern University, and Joseph Ellif, western manager of the *Saturday Evening Post.*

Refrigerating machine for the 1935 Fairbanks-Morse line displays a conventional reciprocating compressor, using sulphur dioxide as the refrigerant. Compressor for the 8-cu. ft. model has two cylinders, and uses a 1/5-hp. Wagner motor. For the other three models a one-cylinder compressor powered by a ⅛-hp. Wagner motor is deemed sufficient. Bore of both compressors is 1½ in., with a 1 7/16-in. stroke.

In the 4 cu. ft. box, 2½ inches of Thermocraft insulation is used. The 5 and 6-cu. ft. boxes have 3½ inches of Thermocraft, and the 8-cu. ft. cabinet has 4 inches of Thermocraft. Bottom of the cabinet has an extra inch of insulation to keep out compressor and motor heat.

A Detroit Lubricator expansion valve, a Cutler-Hammer temperature regulator, and a Bush condenser help complete the assembly.

Rubber-and-spring mounted on a cast-iron base, the compressor has been especially designed for quietness. The machine compartment is insulated against noise with ¼ inch of Cepak (commonly used airplane cabin insulation).

An unusually large oil well is provided to insure against foaming, and an oil baffle and oil damper are inside the compressor.

No piston rings are used in the Fairbanks-Morse compressor. Cast-iron rings, explain F-M engineers, will seat quickly, but don't stay in place. Bronze rings, on the other hand, take from one to two months to seat, causing an oil slap.

Neither alternative considered attractive, the engineers designed a machine without piston rings—and claim that in so doing they achieved higher efficiency.

All castings are close-grained air-furnaced. Homogeneity and fine grain —which help prevent gas leaks—are obtained by breaking up the graphite and carbon in the iron.

The compressor is mirror-finished to remove microscopic "high spots." This finish is equivalent to that of a cylinder in an automobile engine after the first set of rings has worn out.

For smooth and quiet running, a heavy flywheel and big fan are utilized.

Exteriors of all cabinets are finished in Dulux. Interiors are acid-resisting porcelain. Shelves are of the flat-ribbon type, the upper shelf folding, and the lower shelves removable.

Of conventional shell-and-tube design, the evaporator is protected by a chrome-plated brass door. In it extraordinarily large ice cubes — 1 7/16x1 11/16x1¼—are made.

The 4-cu. ft. model has two trays, makes 42 ice cubes and 5 lbs. of ice. The 5 and 6-cu. ft. models have three trays, make 63 ice cubes and 7½ lbs. of ice. The 8-cu. ft. model has four trays and two fast-freezing chambers, makes 84 ice cubes and 10 lbs. of ice.

Hinges, which are an exclusive Fairbanks-Morse design, completely cover the screws, so that the refrigerator can be locked safely without fear of the hinges being unscrewed and the door taken off—which makes the refrigerator useful to hospitals for storage of valuable serums.

All models but the smallest have an automatic interior light.

Between the switch and the housing of the temperature regulator, 1½-inch clearance is allowed—so that the housing won't be damaged by ice accumulation should the owner forget to defrost the refrigerator for several weeks.

Base of the refrigerator is bolted to the main body, and can be removed for a close installation. The ebony (dirt-concealing) legs are high enough for ample air circulation and convenience in cleaning.

Rear of the cabinet has a channel to cover the suction line, tubing and cable, which prevents the refrigerator being pushed too close to the wall with subsequent damage to these parts.

The 4-cu. ft. cabinet has 8.42-sq. ft. shelf area, the 5-cu. ft. box, 9.68-sq. ft.; the 6-cu. ft. box, 12.24-sq. ft.; and the 8-cu. ft. box, 15.95-sq. ft.

Shipping weights are: 4-cu. ft. box —331 lbs.; 5-cu. ft. box—346 lbs.; 6-cu. ft. box—356 lbs.; and 8-cu. ft. box—413 lbs.

WARNING!

Electric Refrigeration News employs no subscription agents. Subscribers are warned against payment of money to strangers who may claim to be representatives of this publication. Reports have been received recently from various cities in Illinois and Wisconsin, indicating that a bogus subscription agent has been soliciting orders and accepting cash. Neither orders nor payment have been transmitted to Electric Refrigeration News by this imposter.

Please note that Electric Refrigeration News does accept orders transmitted by established magazine agencies. We do not encourage this practice and would much prefer to have all orders sent to us direct. Furthermore, we cannot assume any responsibility for the activities of magazine agencies and it is our experience that delays and errors frequently result from placing orders through these channels. We accept such orders when received, however, because large companies which subscribe for a great many publications find it more convenient to do business with these organizations.

Subscribers are advised to make remittance by mail directly to Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich. In only a few instances in the entire history of the paper have mail remittances failed to reach this office.

A.S.R.E. Announces Meeting Program

(Concluded from Page 1, Column 2)

Meat—A Review of Investigations" and Gardner Poole of General Foods, Inc., on "Quick Freezing Progress." Final talk is A.S.R.E.'s sound film "Refrigeration and its Place in the Engineering World" by Mr. Stevenson.

Harry Harrison, vice president of the society, will be chairman of the Thursday morning meeting on "Refrigerating Equipment." This will be addressed by D. C. Simpson, Owens-Illinois Glass Co. on "Glass Wool Insulation"; W. V. Hukill of the U. S. Department of Agriculture on "Progress in Refrigerator Car Methods"; and Edward E. Ashley, New York consulting engineer, on "Department Store Conditioning Systems."

Friday morning's session will be in charge of Glenn Muffly, past president of the society, the general topic to be "Commercial Domestic Field." Speakers will be W. R. Woolrich of Knoxville, Tenn., on "Refrigeration in the TVA"; W. M. Timmerman of General Electric (Cleveland) on "Standards and Codes for Small Refrigerating Machines"; and Siegfried Ruppricht of New York City on "Beer Dispensing."

Several diversions are being planned for evenings and afternoons when technical sessions are not in progress. Among these are a plan for honoring charter members of the society, the annual dinner-dance Thursday night with Van Steeden's orchestra, an inspection trip Thursday afternoon to view a new department store air-conditioning system, and a trip through Rockefeller Center.

62

THE NEWSPAPER OF THE INDUSTRY

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office

ESTABLISHED 1926. MEMBER AUDIT BUREAU OF CIRCULATIONS. MEMBER ASSOCIATED BUSINESS PAPERS. MEMBER PERIODICAL PUBLISHERS INSTITUTE.

VOL. 13, NO. 11, SERIAL NO. 295
ISSUED EVERY WEEK

Copyright, 1934, by Business News Pub. Co.

DETROIT, MICHIGAN, NOVEMBER 14, 1934

Entered as second-class matter Aug. 1, 1927

THREE DOLLARS PER YEAR
TEN CENTS PER COPY

WRITTEN TO BE READ ON ARRIVAL

THE JOHN CRERAR LIBRARY
LIBRARY

Code of Heating Contractors Hit By Nema Group

Attempt Made to Enforce Code on Air Conditioning & Commercial Dealers

WASHINGTON, D. C.—Refrigeration Division of National Electrical Manufacturers Association last week opened its fight to exempt refrigeration manufacturers, distributors, and dealers from provisions of the code governing Heating, Piping, and Air Conditioning Contractors' Industry.

The code establishes a minimum wage for journeymen steamfitters ranging from $1 to $1.20 per hour, and requires them to file copies of bids for jobs amounting to $250 or more, the bids to be accompanied by a $1 fee. As the code now reads, installers of refrigeration equipment are subject to these provisions.

It is possible that because of the code, heating contractors and steamfitting groups in some localities may agree that steamfitters will accept installation work only through heating and piping contractors.

At a public hearing Nov. 8, Haldeman Finnie, consultant to the Nema Refrigeration Division, asked that

(*Concluded on Page 2, Column 1*)

Carrier Has New Line Of 'Cold Diffusers'

(*See Picture on Page 10*)

NEWARK — Carrier Engineering Corp. has just announced a new addition to its line of cold diffusers for cold storage refrigeration, known as the 15-L series cold diffuser, with a capacity of from 1 to 30 tons according to type of application.

Special features of the new line include a hot-dipped galvanized treatment of all principal parts to prevent corrosion; new design low velocity outlets distributing air in all directions; new centrifugal fan which handles the same amount of air with less horsepower than previous models; sectional construction of units to permit top or side discharge of air, and fin-type cooling coils for methyl chloride, Freon, or ammonia.

The new units are made in three sizes and are of the floor-mounted type. Features of cold diffusers are positive air circulation; adequate and varied means of air distribution; surface cooling (with the addition of sprays in one model); automatic control of temperature and room conditions, maintenance of high relative humidities when desired; automatic control of defrosting when the room conditions are 33° F. or above; equipment adaptable to a variety of refrigerants; flexibility of application to variations in storage room layout.

Air Conditioning Display Planned for M. E. Show

NEW YORK CITY—Air-conditioning and heating equipment will be displayed at the eleventh annual National Exposition of Power and Mechanical Engineering to be held in the Grand Central Palace here Dec. 3 to 8. Other new features at the show will include displays of metals, materials, handling equipment, fans, and blowers.

Builds Mayflowers

Homer H. Hardy who is operating commercial and air-conditioning divisions of Trupar Mfg. Co.

• • •

Hardy Firm to Make Mayflower Units

DAYTON—Homer H. Hardy, sales manager of Trupar Mfg. Co. here before that organization was purchased by Dallas E. Winslow, Inc., of Detroit, is now operating the Trupar commercial refrigeration and air-conditioning divisions, the business being established under the name of Hardy Mfg. Co., Inc.

The company will manufacture commercial and air-conditioning equipment under the Mayflower trade name used by Trupar. Production quarters have been set up in a part of the old Trupar building at 100 Davis Ave. in Dayton, according to Mr. Hardy, who is president of the new organization.

Previous to his affiliation with Trupar, Mr. Hardy was assistant foreign manager of Frigidaire Corp.

Moore Demonstrates The 'Hydrocal'

By John T. Schaefer

DETROIT—Refrigerating engineers were shown a new instrument for studying heat transfer problems here Monday night when Prof. A. D. Moore of the department of electrical engineering of the University of Michigan demonstrated the "Hydrocal" before the Detroit section, American Society of Refrigerating Engineers. John Wyllie, Jr., vice president of the section, introduced the speaker.

Developed by university engineers at Ann Arbor, the Hydrocal consists of a series of 12 vertical standpipe tubes in which methylene blue is caused to rise or fall. The height of the liquid in the tubes represents temperature, and the flow of liquid from one tube to the next represents the flow of heat through any material being studied.

Action of liquids in the tubes or standpipes is controlled by manipulation of clips on rubber tubing connecting the various tubes, and the pressure imposed on the liquid is obtained by means of a tank in the instrument which can be raised or lowered.

The speaker demonstrated first the

(*Concluded on Page 11, Column 1*)

Universal Cooler Starts Dec. 1 on New Ward Line

Seeger to Furnish 22,500 Standard Boxes; Leonard Builds Deluxe Cabinets

DETROIT—Universal Cooler Corp.'s production lines will start moving Dec. 1 to fill an order for 22,500 household refrigeration units placed by Montgomery Ward & Co. for its 1935 standard line of refrigerators. The order will keep Universal busy until March 1.

On Jan. 1, the plant will swing into production on units for Ward's deluxe refrigerator line, output on these machines to run into June before the entire contract is filled. Units for both Ward lines will use methyl chloride as the refrigerant.

The standard line will be made up of three models this season, cabinets being made by Seeger Refrigerator Co. of St. Paul. There will be a 4 and a 5½-cu. ft. Dulux-finished model, and a third with 6½ cu. ft. of storage capacity and an all-porcelain finish.

Leonard Refrigerator Co. will supply all cabinets for the Ward deluxe models, of which there will be two—one with 6½ cu. ft. of storage space, the other with 7½.

Two Servel Commercial Districts Headed by Kessler & Terhune

EVANSVILLE, Ind. — Two new commercial field managers have just been appointed by Servel, Inc., according to Harry Newcomb, manager of the company's commercial refrigeration division.

E. A. Terhune, formerly district sales representative in the New England area, has been named eastern manager with offices in Boston and New York City.

Mr. Terhune joined Servel in February, 1934, after serving a number of years as a refrigeration distributor. He was head of the Appliance Engineering Co. in Boston, which was first a Copeland and later a Gibson distributor.

H. T. Kessler, who was formerly in charge of all Servel sales branches, has been made western manager, with headquarters in Chicago.

He joined the Servel organization in June of this year, but previous to his Servel connection had had varied experience in refrigeration. For some years he was president of Copeland Sales Co. in Chicago, a sales branch of Copeland Products, Inc.

Caspers Leaves Cole to Join Ward's Staff

NEW YORK CITY—Harold C. Caspers, kitchen planning department manager of Rex Cole, Inc., New York G-E distributor, has resigned to become assistant to the manager of the refrigeration department of Montgomery Ward & Co., according to E. H. Campbell, Cole sales promotion manager. Mr. Caspers will assume his new duties Nov. 15 and will have headquarters in Chicago.

He joined Cole in June, 1927, as a retail refrigerator salesman and early in 1928 was made a sales director. In 1930 he became assistant apartment house sales manager, and when the electric kitchen department was created in January, 1933, he was appointed manager.

Los Angeles Firm Acquires Three New Plants

LOS ANGELES — Commercial Refrigerator Mfg. Co., maker of commercial refrigerator equipment, has recently acquired three new plants, G. R. Lindahl, vice president, announced recently.

One of these plants will be devoted exclusively to the manufacture of the Insta-Freeze retail ice cream freezer (see story on page 4 of this issue). Another plant will be devoted to making Super-Cold commercial condensing units, and the third plant will be utilized for the manufacture of heavy refrigerators and built-to-order boxes.

The Conservador

Harold A. Glasser, inventor of the Conservador, demonstrates his device to Fairbanks-Morse distributors at their convention.

Nema Asks Stay on Big Machine Code

WASHINGTON, D. C. — A public hearing will be held starting at 10 a. m. Nov. 21 in the Department of Commerce Auditorium here on the application of the refrigeration division of the electrical manufacturing industry for a stay of the Refrigerating Machinery Industry's code so far as it applies to the electrical manufacturing industry, it was announced last week by NRA officials.

The Code Authority for the Refrigerating Industry contends that its code applies not only to manufacturers of refrigeration equipment for industrial and ice-making applications (known in the industry as the "big machine" group) but also to some of the products of manufacturers such as Frigidaire, Kelvinator, etc. who make small commercial refrigerating machines.

The Refrigerating Machinery Industry bases its stand upon the definition in its code which reads as follows:

"'Refrigerating Machinery Subdivi-

(*Concluded on Page 2, Column 5*)

Chicago School to Give Home Study Course

CHICAGO—A new home training course in refrigeration and air conditioning has been started by the Refrigeration & Air Conditioning Institute, 2130 Lawrence Ave. The organization teaches electricity as the L. L. Cooke School of Electricity and radio as Radio & Television Institute.

The course is divided into 12 sections, each with a certain number of lessons or work-sheets and accompanying questions. At the end of every 10 lessons a review is given.

Sections of the course are on (1) domestic refrigeration, (2) commercial refrigeration, (3) industrial refrigeration, (4) air conditioning for homes, (5) commercial air conditioning, (6) industrial air conditioning, (7) estimating, (8) installation, (9) salesman-

(*Concluded on Page 11, Column 2*)

Merchandise Mart Show To Open Jan. 7

CHICAGO—The Merchandise Mart Housefurnishings and Electric Appliance Market, an annual showing, will be held Jan. 7 to 19.

Gibson Markets Standard Type Unit for $79.50

Front Opening Cabinet Is Offered as Competitor To Chest Type Models

GREENVILLE, Mich.—Primarily to put its distributors and dealers in competition with outlets offering low-priced chest models, Gibson Electric Refrigerator Co. is introducing a 4.02-cu. ft. refrigerator of conventional design which sells for $79.50 plus freight. Its model designation is B-4.

The factory will start delivery on the new refrigerator within a fortnight. It was sold in foreign countries before being placed on the market in the United States. Gibson retailers will stress the fact that this model offers more storage space than its chest competitors, while its price is practically the same.

Mounted on 6-in. legs, the B-4 is 43⅝ in. high, 23⅞ in. wide, and 25⅞ in. deep. Its gross storage capacity is 4.15 cu. ft., and its shelf area is 5.53 sq. ft. One ice tray, making 21 cubes, is standard equipment, but the evaporator will accommodate two trays.

Compressor is a two-cylinder unit of conventional design, belt-driven by a ⅛-hp. motor, Delco or G-E. Cabinet liner has a porcelain bottom with enameled sides and top, but all-porcelain liners are available. The evaporator, which is of special design, is electro-tinned copper. A defrosting switch is located near the center of the unit compartment panel.

Gibson officials say that the following food can be "comfortably stored" in the new model: three quarts of milk, two half-pints of cream, two dozen eggs, two lbs. of butter, three packages of cheese, four cans of fruit juice, one bottle catsup, two lbs. of bacon, a five-lb. roast, three leftover containers, five beverage bottles, one 3½-lb. chicken, two heads of lettuce, two cucumbers, three lbs. of tomatoes, two bunches of celery, three grapefruit, six lemons, six oranges, two lbs. of lard, one-half pt. salad dressing, one Krisperator, one qt. water bottle.

New Refrigeration Code Proposed for Detroit

DETROIT—A new refrigeration code for the city of Detroit was proposed last week by Joseph P. Wolff, commissioner of the department of buildings and safety engineering, in an open meeting held Friday afternoon in the City Service building here.

The code is patterned very much after the Chicago ordinance, with various provisions for operation of commercial refrigerating systems under the supervision of an engineer,

(*Concluded on Page 2, Column 4*)

Winslow-Baker-Meyering Name Changed

DETROIT — Name of Winslow-Baker-Meyering Corp., parent company of Copeland, Trupar, and Zerozone, has been changed to Dallas E. Winslow, Inc. No change has been made in the firm's capital structure, according to Mr. Winslow.

Lipman Brings Out Eight 4-Cylinder Commercial Condensing Units

BELOIT, Wis.—General Refrigeration Sales Co. has just announced the addition of a new line of Lipman condensing units in 3, 5, 7½, and 10-hp. sizes for methyl chloride or Freon refrigerants. Specifications of the new machines and a photograph of model 503, a 5-hp. methyl chloride machine, are published on page 10.

The compressors all have four cylinders, and are of the enclosed type with a high crankcase oil level to keep bearings submerged in oil. An oil return and check device are provided to return oil from the low pressure of the system to the crankcase. A sight-glass in the crankcase permits visual inspection of the oil.

The condensers are of the counter-flow, tubular design, with three copper tubes inside to carry condensing water from the inlet at the bottom to the outlet at the top. Hot discharge gas from the compressor enters at the top, passing down between the outer pipe and water tubes where it is liquefied and drains into the drawn steel shell condenser in the base of the machine.

The compressor has a bellows-type crankshaft seal which is designed to be self-actuated by means of the crankcase pressure—the higher this pressure the greater the sealing force exerted. A closing spring exerts sufficient force to keep it closed when the compressor is pumping a vacuum.

(*Concluded on Page 2, Column 5*)

Kelvinator Will Build Demonstration House For Air-Conditioning Equipment

DETROIT—Year-'round home air conditioning will be presented as a practical achievement in a completely conditioned residence which Kelvinator Corp. will soon build for demonstration purposes near its factory here.

Ground will be broken within the next few weeks for the residence, which will be located on Mark Twain Ave., between Plymouth Road and Elmira Ave. When completed, it will serve to show how heating and air-conditioning equipment manufactured by Kelvinator today can be applied to the problem of year-'round home conditioning. Kelvinator refrigeration will also be installed.

In design, construction, and equipment, the Kelvinator home will resemble the average residence of its type in this country, although window designs may depart somewhat from the traditional.

Kelvinator officials state that one of the main purposes of the house is to demonstrate that a single model or set of equipment is not equally efficient, economical, and satisfactory in any part of the country. They claim that it will be possible to duplicate, in the new house, air-conditioning results needed anywhere in the United States.

One feature of the Kelvinator home will be its kitchen, which has been designed by the company's home economics department. It will be completely electrified. Another feature will be its lighting effects.

Heating Contractors Attempt to Control Installation Practice

(Concluded from Page 1, Column 1)

certain words be deleted in Section 1 of the code for Heating, Piping, and Air Conditioning Contractors. This is the definitive paragraph of the code and reads as follows:

"The term 'Heating, Piping, and Air Conditioning Contractors' Division, as used herein shall include the furnishing and installing of systems, or parts thereof, for steam and hot water heating, ventilating, *refrigeration, air conditioning,* power piping, industrial process piping, sprinkling piping, temperature control piping, high and low pressure boilers, stokers, oil burning units, pneumatic piping, hydraulic power piping, and all apparatus, appurtenances and piping systems in connection therewith, regardless of whether such piping conveys steam, water, air, *brine, ammonia,* oil or *other fluids* or other commercial products . . ."

Asks for Deletions

Mr. Finnie's brief asked that the words "refrigeration," "air conditioning," "brine," "ammonia," and "or other fluids" be deleted.

He contended that members of the Heating, Piping, and Air Conditioning Contractors Association are not truly representative of installers of commercial refrigeration and comfort-cooling equipment.

Deputy administrator in charge of the hearing granted another 10 days for filing of more briefs in protest of the code.

Mr. Finnie has issued a bulletin to manufacturers, urging that their distributors flood the NRA with protests against the Heating, Piping, and Air Conditioning Contractors code wording. He is now preparing another brief contending that these contractors are not truly representative of firms which install refrigeration equipment.

But for a St. Louis refrigeration distributor who sought the advice of his manufacturer when an attempt was made to force his compliance with the code, the hearings might have passed without the refrigeration industry having a chance to make formal protest to the NRA.

The manufacturer informed Mr. Finnie, who had just time enough to prepare a brief for presentation at the hearings last Thursday.

Manufacturers Protest

According to Mr. Finnie, all others who launched a protest at the hearings were manufacturers who are affected by the code in that (1) manufacturers and others have to subscribe to the terms of the Heating, Piping, and Air Conditioning Contractors' code when they touch any piping in the course of maintenance of plant facilities, and (2) manufacturers of industrial equipment of any kind, including piping, may not erect their equipment in the field with their own installation men without following provisions of the code.

The brief which Mr. Finnie presented at last week's hearings is as follows:

National Industrial Recovery Board
Washington, D. C.
Gentlemen:

"On behalf of the members of the Refrigeration Sub-division of the Electrical Manufacturing Industry and their distributors and dealers, we request that the definitions in the Supplemental Code of Fair Competition for the Heating, Piping, and Air Conditioning Contractors' Industry (Approved Code No. 244, Supplement No. 16) be amended by deleting from Section 1 (a) of Article I of the words "refrigeration, air conditioning," in lines 4 and 5, and the words "brine, ammonia" and "or other fluids" in line 10. In support of this request we submit the following facts.

"The members of the Refrigeration Division of the National Electrical Manufacturers Association manufacture and sell both household and commercial electric refrigeration and air conditioning units. Their products have always been, and are still being, sold and installed almost exclusively by independent distributors and dealers. These outlets include many different types of businesses—appliance dealers (handling washing machines, oil burners, vacuum cleaners, and the like), hardware stores, furniture stores, department stores, public utilities and separate establishments engaged solely in the refrigeration and air conditioning business.

"Heating contractors have not, as a class, been distributors and installers of our products.

"The installation and servicing of electric refrigeration and air conditioning units involves an entirely different technique than the installation of heating and power piping. Refrigerant gases are extremely volatile and difficult to handle. Consequently, only highly skilled personnel with adequate training and experience can do the work properly, thereby ensuring satisfaction to the user and protection to the good name of the manufacturer.

"Heating contractors do not, as a class, possess such specialized training and experience.

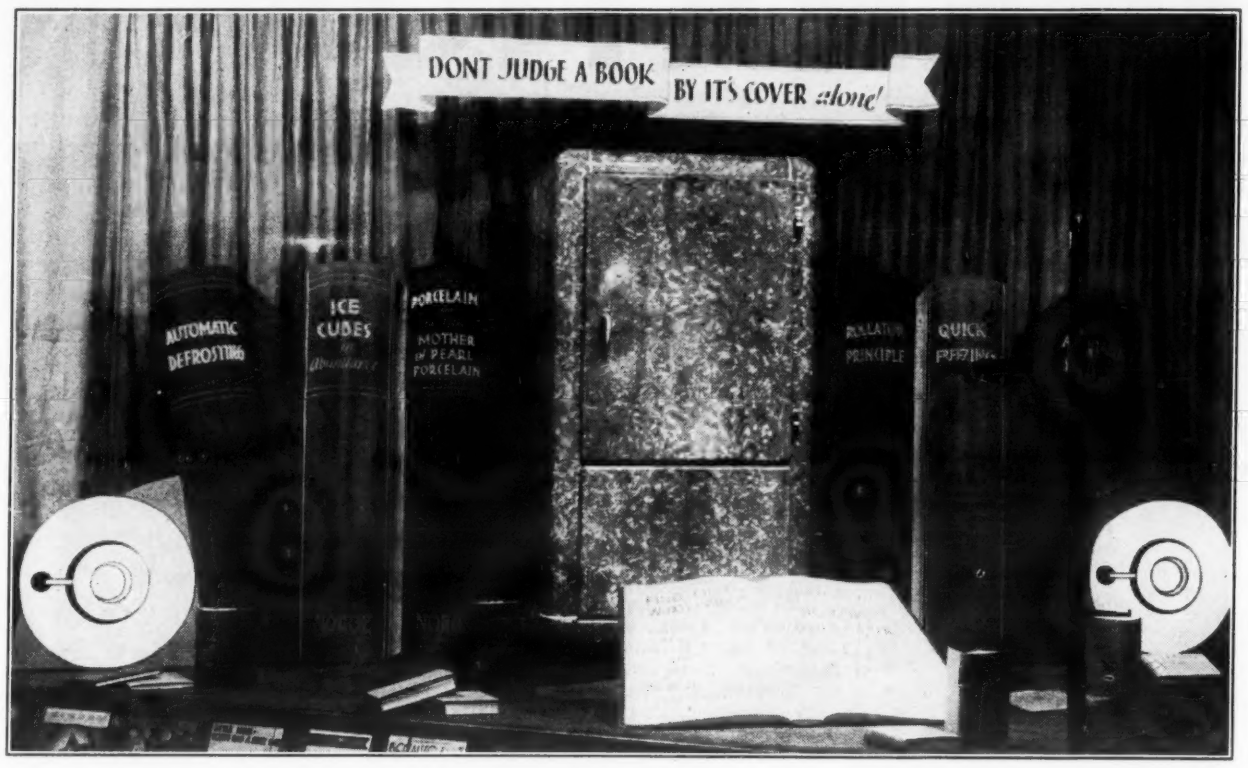
"Existing distributing organizations in our industry have a responsibility to the public to maintain adequate service facilities for the millions of existing electric refrigeration installations. Such service can be furnished to the public at a reasonable cost only if service and installation departments are operated on an economical basis. This can only be done by arranging to have the installation of new equipment and the servicing of old handled by the same trained personnel. To restrict the installation of new equipment to the members of the heating contractors' industry, who are unskilled and inexperienced in this class of work, would result in increased service costs to the public and throw out of employment many highly skilled refrigeration men now employed by our industry.

"Our industry did not participate in any way in the establishment of the Heating, Piping, and Air Conditioning Contractors' Code.

"We submit, therefore, that when the proponents of the code inserted the words "refrigeration" and "air conditioning" in Article I, they were not truly representative of the installers of those products. We contend that neither fact nor theory can justify the inclusion of refrigeration and air conditioning with heating and power piping. In our opinion the heating contracting industry has gone far beyond the bounds of propriety in its efforts to include within its scope an essential process in another industry with which it has no connection whatsoever.

"In view of the foregoing we repeat our request that the definitions in the subject code be amended as set forth in the first paragraph hereof."

A Bookworm Gets Refrigeration-Minded



Jenkins Music Co., distributor in Kansas City, used this theme in a recent window display contest sponsored by Norge Corp. and was awarded the first prize of $500.

New Refrigeration Code Proposed for Detroit

(Concluded from Page 1, Column 5)

and in addition has two new licensing clauses.

One licensing clause, sponsored by the Detroit chapter of the Refrigeration Service Engineers Society, would require that a license and bond be required of every service man operating in the city of Detroit. Another stipulates that refrigerants be sold only through distributors licensed by the city.

Considerable discussion was evoked by the various regulations in the new code, and will be continued in the next meeting at 2 p. m. Friday, Nov. 23, in the City Service building. In the meantime interested parties may secure copies of the proposed code by addressing Halstead Mills, chief safety engineer of the City of Detroit, City Service building.

Those registered at Friday's meeting were:

George B. Bright, George B. Bright Co.; George Clark, Mercier & Clark; Chester M. Culver, Employers Association of Detroit; R. A. Day, Kelvinator Sales Corp.; W. C. Dever, Virginia Smelting Co.; J. H. Downs, Downs Refrigeration Service; A. C. Ellerbusch, Frigidaire Sales Corp.; W. Geissman, Fairmont Creamery Co.; W. G. Gutsch, Stroh Brewing Co.; F. J. Heidemann, Aerflo Cooling Systems; T. P. Hetu, Hartford Boiler & Inspection Co.; Frank J. Houston, Grand River Refrigeration Service; J. Hoye, Bordens Farm Products Co.; B. G. Hyatt, Copeland Refrigeration Corp.; J. P. Lindsay, Ace Refrigeration Service; Fred Ling, Detroit Creameries; E. A. Mayrend, Mercier & Clark; E. E. McEwan, Frigidaire Sales Corp.; R. Noland, Stroh Brewing Co.; H. G. B. Nutting, Atmospheric Control Co.; J. M. Oberc, J. M. Oberc, Inc.; G. Rackleft, Crowley Milner Co.; H. A. Rickart, Detroit Board of Commerce; M. Rothenberg, Republic Refrigeration Service; G. Taylor, Kelvinator Sales Corp.; M. E. Taylor, Eaton Clark Co.; and George W. Weigle, Detroit City Gas Co.

Nema Seeks Stay on 'Big Machine' Code

(Concluded from Page 1, Column 4)

sion' means the engineering, design, and production of commercial and industrial ice making and refrigerating machinery and equipment incidental thereto. . . . any work or process incidental to and carried on by an employer at his plant or elsewhere as a part of the manufacture of any product of the Subdivision shall be governed by the provisions of this Code rather than any other Code."

It is the contention of the Refrigeration Division of National Electrical Manufacturers Association that it was not represented in preparing the Refrigerating Machinery Industry's Code.

It is probable that an attempt will be made at the hearing to define just what, if any, products of the "small machine" group fall within the scope of the Refrigerating Machinery Industry code and to draw up an amendment to the code incorporating these definitions.

The matter of defining the products covered by the code is of salient importance, as assessments for the administration of the code are levied on the basis of dollar volume of sales of those manufactured products covered by the code.

It is probable that a meeting of Refrigeration Division officials and Refrigerating Machinery Association officials will be held preceding the meeting, at which time it is likely that an agreement on definitions will be reached.

The Refrigerating Machinery Industry code will not apply to the electrical manufacturing industry, pending the result of the hearing, which will be held under the direction of Deputy Administrator B. S. King.

Lipman Brings Out Line Of Large Freon Units

(Concluded from Page 1, Column 2)

The bellows assembly rotates with the crankshaft, and seals against the end-plate.

Suction and discharge valves—of the ring disc type—are both incorporated in the same valve plate. Two suction strainers are provided, one at the entrance to each pair of cylinders, to keep dirt from entering the compressor.

Compressors are fitted with service valves in the suction and discharge lines. These are of the back-seating type, with connections for gauges and for charging and purging.

The methyl chloride machines are built in two sizes, 3 and 5 hp., and each size in three types. Type S is for ordinary commercial refrigeration requiring evaporator temperatures from −10 to +25° F. Type L is for low-temperature applications requiring evaporator temperatures from −30° to zero. Type H is for water cooling, air conditioning, and other applications requiring evaporator temperatures from 25 to 50° F.

The Freon machines are made in four sizes, 3, 5, 7½, and 10 hp. with just the standard (S type) and the high-temperature (H type) models for each size.

Lee Hardware is Crosley Distributor in Shreveport

CINCINNATI—Howard Richardson, assistant to the president in charge of sales, Crosley Radio Corp., has announced that the Lee Hardware Co., Shreveport, La., has been named distributor for Crosley radios and refrigerators.

Ontario Helps Farmers To Buy Cold Storage Equipment

OTTAWA, Ontario—Government of Ontario is about to inaugurate a program in which it will encourage farmers to equip their properties with cold storage facilities, and so boost electrical consumption by 200,000 to 500,000 hp. and aid rural folk in more profitable handling of perishables.

Cost of electrical equipment per farm would average between $100 and $250, exclusive of housing costs, say officials of the Hydro-Electric Power Commission, agency which supervises government power production.

For several years the commission has made loans to farmers to buy various electrical apparatus, the loans being made up to $1,000 with interest at 6 per cent and collection made with bills for current. This plan will probably be used in the new program, and it is not expected that the government will dicker with manufacturers for special low prices on refrigerators.

The commission already has authority and funds to pay 50 per cent of the cost of new power lines in rural areas. If small communities want to construct cold storage plants, the government will help in financing and will effect a rate reduction.

Ontario Electric Corp. to Handle Servel in Buffalo

EVANSVILLE, Ind.—Ontario Electric Corp., 431 East Genesee St., Buffalo, has been appointed distributor of Servel commercial refrigeration and air-conditioning equipment.

For the past several years the Buffalo territory has been served by a Servel factory branch, which with the appointment of the new distributor is discontinued. H. M. Batz, former commercial sales manager of the branch, will handle the commercial refrigeration division for the new distributor.

Copeland
DEPENDABLE *ELECTRIC* REFRIGERATION

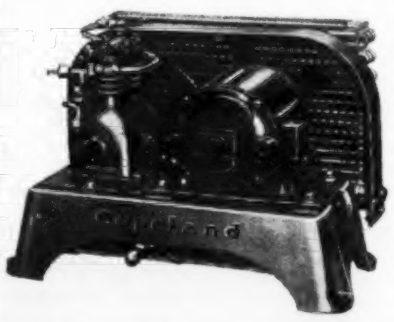
Ready - - Willing - - Able

In considering a contract, lawyers stress the "Readiness" for service, "Willingness" to perform and "Ability" to fulfill, as its essence . . . the lack of any one specification making an agreement of doubtful value.

Copeland Condensing units have demonstrated their "Readiness" . . . their "Willingness" and their "Ability" by dependable performance during more than 16 years service in the field.

Distributors may rely on Copeland's "Readiness" to meet any demand; "Willingness" to co-operate; and "Ability" to deliver in time and as ordered.

There are 21 distinct models of Copeland Commercial Units; Air and Water Cooled; motor or gas-engine driven; 1/6 to 3 H.P.; 100 to 3250 lbs. I.M.E. Capacity.



1935 Contracts for distributor representation covering protected territories are now being written. . . . Write for details if interested.

COPELAND REFRIGERATION CORPORATION
Division of DALLAS E. WINSLOW, INC.
Mount Clemens, Mich.

● *Extra Dry* ESOTOO
LIQUID SULPHUR DIOXIDE
● V-METH-L
METHYL CHLORIDE

WEST NORFOLK, VA.
131 State St., Boston, and
76 Beaver St., New York

STAINLESS STEEL MODELS FOR SERVICE REPLACEMENT

RANCO'S new Model KRS is equipped with rugged steel frame and stainless steel case. Only 5 different combinations are needed to meet the service requirements of practically every household refrigerator, water cooler and ice cream cabinet. Descriptive bulletin mailed on request.

RANCO THERMOSTAT

THE AUTOMATIC RECLOSING CIRCUIT BREAKER COMPANY
1300-10 Indianola Avenue, Columbus, Ohio

"There's the Man we want"

★ *If Frigidaire dealers were to be appointed simply for the sake of getting more outlets, Frigidaire could have many times the dealers it has today.*

But Frigidaire believes in giving more than the usual factory cooperation to every dealer appointed—and that every dealer should be of the type who can benefit fully from the help we give him.

We want only the *best* of dealers. And the best of dealers want only the best in electric refrigerators. So it is the most natural thing in the world that Frigidaire and the leading electric refrigeration dealers of the country should work together.

They do. And in more ways than one.

We give each Frigidaire dealer assistance in training salesmen in successful methods of specialty selling. We give him promotional ideas and merchandising plans that are worked out to fit his own particular needs. We give him the support of strong national advertising. We prepare copy and cooperate with him on local advertising that expresses his own personality. And —above all—we give him the benefit of an arrangement that enables him to make real profits.

Frigidaire's sales program for 1935 will soon be complete.

It will embody all the principles that have proved sound in the past—and a few surprises as well. If, like General Motors, you have "an eye to the future—an ear to the ground"—if you want to go along with a company that expects to go places next year—now is the time to start.

A letter will bring you complete information. Write Frigidaire Corporation, Subsidiary of General Motors Corporation, Dayton, Ohio.

Frigidaire

PRODUCT OF GENERAL MOTORS

THE WORLD'S MOST POPULAR ELECTRIC REFRIGERATOR

PERSONALITIES

By George F. Taubeneck

Nominee for F.D.R.'s Brain Trust

Prof. FRED E. CLARK of Northwestern University isn't in the Brain Trust which reputedly coaches President FRANKLIN D. ROOSEVELT in his task of remaking the United States into something yet again, Mawruss.

But some 100 Fairbanks-Morse distributors and key executives agreed, after hearing Prof. Clark talk at their convention, that F.D.R. would do well to trade in a few—and maybe throw in a couple of dams and reforestation projects to boot—Columbia professors on Northwestern's ace economic interpreter.

Here was a professor who talked to business men in a language they could understand, and who expounded theories evolved from facts which his audience of independent distributors recognized as truths which were a part of their own fundamental business experience.

"Just as automobiles helped pull us out of the 1920 depression," averred Prof. Clark, so household appliances are now helping—and will continue to help—pull us out of the current business stagnation.

"Each and everyone of you gentlemen in this room is in an enviable position today. You have an excellent opportunity to make real money in the months and years to come, for you are identified with an industry which is in a strategic position to lead the nation's return to prosperity and profits."

As compared with other nations, Prof. Clark points out, the United States is primarily a quality market, and its people respond to a quality appeal. And as no other populace in the world, they are influenced by advertising.

"Americans," declares Prof. Clark, "like to exercise their sovereign right of making a choice. Instead of buying just a can of tomato soup, they like to decide between the Heinz label and the Campbell label. Rather than ordering 'a sack of flour,' they like to show a preference for, say, Pillsbury's Best, or Washburn-Crosby's Gold Medal.

"Advertising has now become the turning point which determines largely the success or failure of a business concern. If the promotion job is intelligent and keyed well to the market, the concern generally succeeds; if the advertising job is poorly done, that concern rarely becomes a factor in its industry."

One thing which frequently fools merchandisers, observed the Northwestern educator, is so simple and obvious that men in positions of responsibility frequently overlook it in making their calculations; that is that there are three kinds of buyers.

Factories hire skilled buyers who are interested only in specifications, performance standards, and costs.

Dealers are also canny buyers; but in addition to physical characteristics they are interested in a variety of other factors: eye appeal, stability of the manufacturer, reputation in the industry, and the like.

A *consumer* is a totally different animal from the other two. Physical characteristics really play only a small part in the processes by which he arrives at a decision to buy a certain article. Personal and psychological reasons really determine his buying habits.

Nothing is so significant of the vast change which has come about in American life than this brand consciousness, thinks Prof. Clark.

The blacksmith now runs a hardware store, the barber a beauty

Prof. Fred E. Clark.

parlor, the dressmaker a dress salon, and the tailor a haberdashery. In other words, people buy an article made by someone they never saw—rather than by a man who may have been a lifelong friend—simply because they believe in a trademark.

This means, of course, that the cost of marketing has gone up considerably in the last quarter century. But in return for this extra cost, the consumer gets added service, convenience, protection, and satisfaction—for all of which most of us are more than willing to pay.

Bill Grunow's Stratosphere Balloon About to Go Up

As reported in this kolyum a couple of weeks ago, Bill Grunow and Peoples Outfitting Co., Detroit Grunow outlet, jointly sponsored Prof. Jean Piccard's recent stratosphere flight. These night pictures of the inflation of the balloon were taken at a considerable distance from the balloon by John Wyllie, Temprite Products sales manager and an expert amateur photographer, who borrowed the editor's f:1.5 Contax for the occasion. Mrs. Jeannette Piccard, pilot of the balloon, pronounced them the two finest pictures taken at any time during the preparations for the flight. Dr. Jean Piccard, scientific director and observer, made this flight for the purpose of studying the origin and nature of the mysterious "cosmic rays" which are best observed at extreme altitudes. Exact knowledge of these rays and their actions is sought by scientists, who believe new sources of energy may eventually be developed through this information which might prove of immense value to humanity. An elevation of 45,000 feet, or nearly nine miles, must be reached before observations are of the greatest value.

Selective Selling

Most important development of the depression, avers Prof. Clark, is the recognition of the economy of selective selling. Where before salesmanagers would set out on a wild and breathless chase to secure indiscriminately the maximum number of outlets in every hamlet, crossroads corners, and water hole in the nation, they now spend considerable time checking market data before deciding *where they can locate a profitable dealer operation.*

The theory that the more sales outlets a factory had the more units it would sell was all very well, Prof. Clark points out, until the depression came along and turned a spotlight on sales costs. *The high cost of servicing dealers has made it imperative that manufacturers concentrate on their best and most productive dealers to conduct a profitable business.*

Another lesson that the depression has taught merchandisers, Prof. Clark told the Fairbanks-Morse men, is that people respond most quickly to newness in a product. Either develop a new product or restyle your old one, if you would sell people today.

Much of the criticism that the TVA and EH&FA have been getting has been entirely justified, Prof. Clark thinks. However, the situation does have its bright side: all of the palaver and furore has helped make people "appliance conscious," and has helped convince thousands of persons that electrical appliances really are necessities for modern home life.

* * *

Publisher's Kick

There seems to be no limit the confusion and dissatisfaction which TVA is able to cause down South. The other day there came to our desk a letter, postmarked "Chattanooga, Tenn.," from CRANSTON WILLIAMS, addressed to Southern Newspaper Publishers Association. It read:

"When will EHFA (Electric Home and Farm Authority unit of TVA) start paying for newspaper advertising and what will comprise the advertising program? That question is arising every day among newspapers primarily in TVA territory, particularly in view of free publicity efforts recently and elaborate roto pamphlet mailed under government frank.

"In SNPA Advertising Series Bulletin 1, June 13, 1934, statement was made: 'SNPA is definitely promised free publicity will not be cornerstone of plan as is case usually with governmental activities.' On July 28, EHFA issued press release with first paragraph reading: 'The Electric Home and Farm Authority today announced approval of a new type electric refrigerator produced by the Crosley Radio Corp., to be for sale in the Tennessee Valley area for a price of $72.50 delivered to the customer's home.'

"It is the view of some publishers that such publicity from private manufacturers is denounced as an example of free space grafting to substitute for legitimate paid advertising. Why should any government agency competing with private enterprise not pay for advertising and publicity just like a private concern?

"On Aug. 14, Forrest Allen, in charge of Press and Publications Department of EHFA, wrote Secretary-Manager Cranston Williams as follows: 'Because of several unforseen circumstances, Board action has not yet been taken on the establishment of an advertising policy for EHFA and I am writing you at this time because I recall predicting that such a policy would be decided upon sometime this month. Decision on this question will now go over until sometime after Sept. 15 when Mr. Lilienthal returns from Europe.'

"The 12-page rotogravure pamphlet with one sheet insert of two pages just issued by EHFA was printed in New York City. Young & Rubicam Agency in New York were retained last April for a period of four months to supply consultant and technical services in the planning and preparation of a long time educational and promotional program and merchandising of the group of electrical appliances approved by TVA. Press stories say 300,000 pamphlets are being distributed.

"They are mailed in large manilla envelope with *government frank* and usual statement: 'Official Business.' This pamphlet at regular third class postage would cost 4½ cents each. Since envelopes are sealed, at first class postage rate would be 10 cents locally and 15 cents elsewhere for each pamphlet. Just figure for yourself the postage bill without government frank.

"How is media like newspaper advertising to compete in any kind of advertising program on basis of cost if postage bill from direct-by-mail is eliminated?

"If EHFA is entitled to reasonable 'grace' period for promotion program 'in the public welfare' and as stimulant to newspaper advertising by private manufacturers, how long are newspapers expected to be reasonable?"

All of which again gives rise to the observation that the chief criticism of TVA is that it has been UNFAIR to organized business.

Kelvinator's Sales Promotion Department Makes a Talking Picture to Show to Dealers

Soon Kelvinator dealers will see a talking picture, dedicated to the task of making them "county conscious" (aware of neglected sales opportunities in every county), which was made in Detroit's Metropolitan Motion Picture studios under the supervision of the Kelvinator sales promotion department. (1) Director Al Weeks opens a bottle of milk. Vance Woodcox, Kelvinator advertising manager, is second from the left. (2) At 2 a. m. a scene finally clicks. (3) George Wilcock of Kelvinator (center) directs the setting of a refrigerator. (4) Mr. Wilcock shows up again.

Last Night of A Century of Progress Exposition Is a Thriller

On this page last week was an account of the hell-for-leather last night of the World's Fair. Here are some pictures: (1) Dismantling the General Electric exhibit. (2) Youths tearing down signs and posters. (3) George Deacon, Grunow mid-west field representative, shows how the fan dance should be done. (4 & 5) Barkers lured thousands into the wide-open peep shows.

"WHERE ARE THESE MEN?

Distributors and Dealers who WANT TO HANDLE *and* CAN LEARN TO SELL *Air Conditioning Equipment*

HOW CAN *I* FIND THEM?"

FROM what ranks—what trade affiliations—can manufacturers of air-conditioning equipment recruit competent distributors and aggressive dealers? From heating and ventilating men? From plumbers, radio dealers, automobile dealers, electrical dealers? From the electric refrigeration industry, or where? Perhaps no one group gives the whole answer to distribution. Possibly all can make contributions. But one thing is certain. Some of these groups are better qualified than others. And of them all, the electric refrigeration store offers a most logical distribution outlet for air-conditioning manufacturers.

The electric refrigeration dealer is a salesman. His record proves that. He knows specialty selling. He is familiar with time-payment business. He understands installation and servicing. Refrigeration is an essential part of air conditioning. For the "package type" of self-contained room coolers, the better household refrigeration dealer is just made to order.

Then again for air-conditioning installations which require engineering service, could there be a more logical outlet than the distributor or dealer engaged in commercial refrigeration? These men have engineering background plus their specialty-selling ability. Their sales are based on engineering estimates. They know time-payment selling. Installation and servicing is part of their daily business. And "comfort cooling" is the part of air conditioning which has caught the public's fancy. These men are "tailor-made" distributors and dealers for air-conditioning manufacturers. In fact many of them are already in this new business.

ELECTRIC REFRIGERATION NEWS is the business newspaper of the refrigeration industry—household and commercial. By a natural evolution it has also become the business newspaper of the air-conditioning industry. It is a recognized source of information on this new business, and is also read by men in other industries who are considering air-conditioning opportunities. On every count it offers to manufacturers of air-conditioning equipment a logical and effective means of contacting potential distributors, dealers, salesmen, and service men quickly and economically.

ELECTRIC
REFRIGERATION NEWS
5229 Cass Avenue - Detroit

COMMERCIAL REFRIGERATION

Ice Cream Frozen for Individual Orders By New Machine

LOS ANGELES—An ice cream machine that will produce individual dishes in 40 seconds and which will also produce fruit sherbets, malted milks, frosted beverages in a few moments time is now being manufactured and marketed under the name of Insta-Freeze by the Commercial Refrigerator Mfg. Co. of this city.

Any material in a liquid form can be used with Insta-Freeze, declares Vice President G. R. Lindahl of the Commercial Refrigerator Mfg. Co. Ice cream mix, fruits, or berries when reduced to a liquid that will run through a ⅛-in. hole can be used.

In operation of the machine this liquid is poured into a hopper at the top. A turn of the dial starts the machine, delivering the liquid into an atomizer which operates vertically the full length of the cylinder.

The spray revolves at a speed of 3,000 r.p.m., the liquid material thus being broken up in a fine spray and directed against the cylinder wall that is maintained at temperatures below 0° F. The spray is instantly frozen on impact with the cylinder wall.

As soon as the liquid has run through, a cutter head automatically engages and shears the frozen mass from the cylinder walls, forms it into a mold and delivers it into a dish.

Prepared ice cream mix of any butterfat or sugar content may be used. Four ounces of ice cream mix poured into the hopper comes out a finished dish of ice cream in 40 seconds.

Combinations of ice cream and other materials also can be handled. For example, the operator can pour two ounces of ice cream mix in the hopper, following with two ounces of strained strawberries, and the final result is a dish of strawberries with cream on the outside. The material that is poured in first is the outer layer as this is the material that freezes to the wall first.

In making malted milks, the flavoring and malt is put into the bottom of a spinner, and the spinner is placed under the cylinder. The required amount of malt mix is then poured into the hopper and as this is run through it is frozen and scraped from the walls and delivered into the mixer. The spinner in the mixer breaks up the frozen material into a heavy liquid and at the same time whips air into the mix securing a high overrun.

The retail price of the Insta-Freeze machine with twin-cylinder, ⅛-hp. refrigerating machine is $595.

* * *

Universal Cooler Corp. Corrects Problem in Packing Plant

CHESANING, Mich. — When the Peet Packing Co., a pork packing firm of this city, found that its refrigeration system was being overloaded and that its hog chilling room was operating inefficiently, Universal Cooler Corp. engineers were called in to supply the needed extra refrigeration and to make alterations in the hog chilling room.

Universal Cooler equipment was installed to handle a new storage room (there are 18 others) for sausage and cold meats and the hog chilling room, in which 140 fresh killed hogs are placed daily.

The existing iron pipe coils were used in the chilling room and the same type of cooling unit was placed in the new meat storage chamber.

A 10-hp. Freon condensing unit was installed. After the unit was put into operation, Universal Cooler engineers faced a problem that had been one of the main difficulties previously—namely, the formation of excessive frost on the coils.

Formerly, the coils had become so heavily coated with frost that their operation was very inefficient and in order to defrost them it would have been necessary to shut off several other coolers, which it was impossible to do because of the perishability of the products stored in these coolers. The only way the coils could be cleaned was to have a workman crawl up into the bunkers and scrape the coils off.

Universal Cooler engineers have devised a system whereby each morning, when the room is filled with fresh-killed hogs, the unit is shut off for not more than 30 minutes, the heat from the hogs melting the frost.

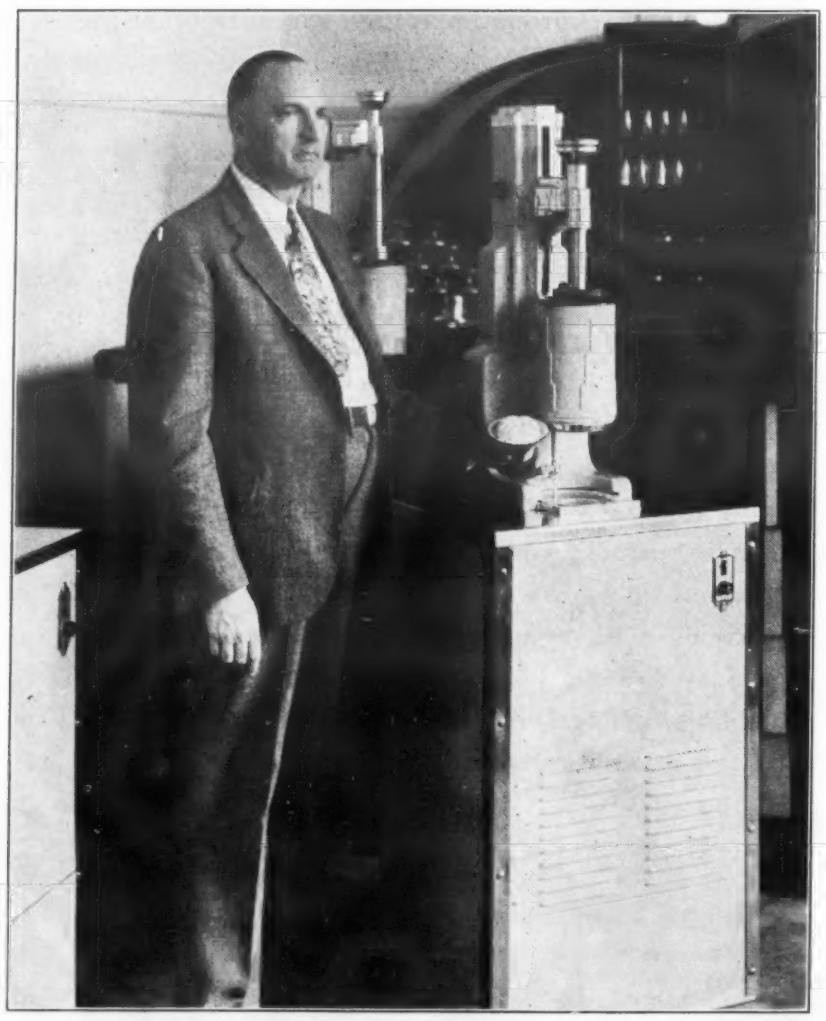
The unit is then started up and with the clean coils it naturally pulls down the temperature faster and more than gains the time lost on the snutdown.

Seeger Tells Features In Mailing Piece

ST. PAUL—"Check the Important Features" is the theme of a new mailing promotion piece which has just been put out by the Seeger Refrigerator Co. of this city.

The features which are illustrated and "checked" in the mailing piece include the overhead coil assembly, exterior case construction, porcelain display platters, molded hard rubber doors, rubber gasket, package and cutting shelf.

Short Order Ice Cream



This "Insta-Freeze" machine is said to produce individual dishes of ice cream in less than a minute's time.

Frigidaire Equipment Sold to 26th Store of Philadelphia Chain

PHILADELPHIA — With installation of Frigidaire commercial refrigeration equipment in a new store of Baltimore Markets, Inc., large Philadelphia retail meat organization, 26 of the company's 34 retail units now are completely equipped with Frigidaire commercial systems.

The sales and installations are handled by J. J. Pocock, Inc., Philadelphia distributor for Frigidaire.

Of the organization's use of mechanical refrigeration, Bernard Z. Rose, treasurer, stated:

"Use of mechanical refrigeration has not always been considered essential to our success. It took considerable proof and salesmanship to sell us our first unit; in fact, the use of that hinged on an accident, a lack of adequate room for refrigeration by ice in one market. From that time to the present date, mechanical refrigeration has proved itself worthwhile and indispensable.

"We were under the impression that the use of ice, without the necessary investments for mechanical refrigeration machines, was cheaper. Usage has proved that our investment, and the necessary charge for the use of that money, and depreciation of the equipment, save us considerable money."

Harlan Suggests Ways To Boost Winter Sales

DETROIT—In a communication to his company's dealers and salesmen selling commercial refrigeration equipment, J. A. Harlan, commercial sales manager of Kelvinator Corp. here, discusses the problem of winter selling and offers suggestions for upping the off-season sales curve.

Excerpts from his message follow:

". . . This is the time of year when interest in refrigeration naturally drops off. The prospect who has gone through the past summer without buying when the need was greatest can find plenty of excuses for putting off action now.

"There is nothing new about this problem, unless it is that commercial refrigeration business generally is holding up better than usual. To experienced merchandisers this is not surprising. . . .

"For the past four years merchants have been hard hit. Naturally they have hesitated at making improvements involving the purchase of new equipment. But with rising prices and an improved business outlook, they are realizing that they need to modernize to keep up with competition. They can delay no longer.

"Several factors serve to make commercial refrigeration more salable now than at any other time. In the first place, the product is sold on a cost and savings basis. Since commercial refrigeration is a recognized necessity the year around, most merchants will buy now if they are convinced that the purchase means money in their pockets.

"It is also easier for the average merchant to meet his payments during the next six months because his income picks up with the coming of colder weather. People are coming back to town. Schools start. Factories are busier. Folks eat more, buy more.

"The important thing is to keep working. In the fall many companies pull in their horns and the commercial salesman who will keep going has the field pretty much to himself.

"Take the case of a certain water company in New England. Experience has shown them that the best time to sell water coolers is in the fall and winter. They make no special èffort to sell coolers during the spring and summer, simply taking what business comes their way.

"But as soon as cool weather comes, they organize their sales force and go out after business. Like most types of commercial refrigeration, the need for water coolers is there the year around. With no serious competition to hinder them, they have no difficulty in closing prospects. As a matter of fact, they usually sell more water coolers in the fall and winter than are sold by all other companies combined during the rest of the year. . . . ."

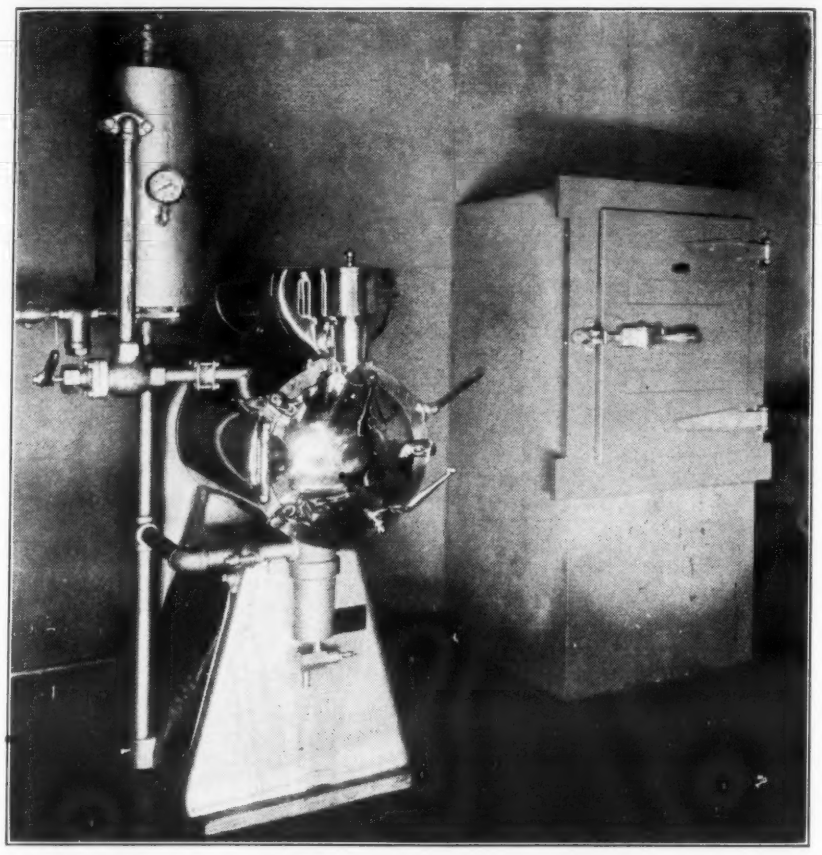
Full-Vision Vegetable Case Installed by Cruse

LOUISVILLE, Ky.—A Cruse "Vegeteria" display case with full-vision front was recently installed in Kampschaefer's grocery store here.

Feature of the case are the three full-length sliding glass doors on the front of the case.

There are three shelves on the inside of the case. Each shelf is equipped with a number of wire baskets into which different kinds of fruits and berries may be segregated.

New Dairy's Freezer Room



This ice cream freezer in the Fredericks' plant in Detroit was designed for ammonia, but is hooked up to a Universal Cooler Freon unit.

* * *

Waterloo, Ia. Merchant Adds New Herrick Equipment

WATERLOO, Iowa — Harold Othmer, manager of Othmer's Foodhaven here, was quick to take advantage of the opportunity left open by the closing of his nearest competitior, a chain store unit. His first move was to enlarge the store's refrigeration capacity.

Mr. Othmer installed the following additional refrigerator equipment: an 8-ft. double-duty Herrick display case, complete with coils; a Herrick model PF86 walk-in cooler; porcelain wall paneling covering 11 ft. of his wall space in the meat department; a Peerless "flash cooler" for the walk-in cooler; and a ¾-hp. Wurlitzer commercial refrigerating machine.

The job was designed and carried out by the Herrick Refrigerator Co.

His power bill for the first month of operation (this included current for electric slicer and grinder) was $5.35.

Savings in Operating Cost Buys New Equipment

TOLEDO—Savings in operating cost are paying for the installation of modern refrigeration equipment in Kables restaurant here, declares the proprietor.

W. W. Wickerham, representing the H. G. Bogart Co., Toledo G-E distributor, equipped the restaurant with a 2-hp. and a ½-hp. condensing unit, four fin coils, one "Conditioned Air" unit and one water-cooling unit, to replace an antiquated 7½-hp. ice-making machine.

Using the corresponding month of the previous year for comparison, the decrease in electric power and water bills has demonstrated a savings sufficient to make a payment on the equipment, pay the power and water bills, with $11 left over.

Universal Cooler Equips Detroit Ice Cream Firm

DETROIT—Universal Cooler Corp. has installed a 10-hp. Freon condensing unit at the Fredericks Ice Cream Co. here to handle a Cherry-Burrell direct expansion ice cream freezer. Feature of the job is that the freezer was fitted with ammonia connections, but no changes were made even though the condensing unit operates with Freon.

In addition to handling the freezer, which freezes and whips 10 gallons of ice cream every six minutes, the condensing unit also furnishes refrigeration for a 1,000-gal. hardening room, and for a 6x8-ft. anteroom for storage of the mix. Pipe coils are used in the hardening room.

During the summer the Fredericks plant produces on the average of 600 gallons of ice cream daily.

When the freezer isn't working, the full capacity of the condensing unit is switched to take care of the hardening room.

However, individual suction and liquid lines are run to the hardening room to provide refrigeration even when the freezer is working.

A 1-hp. Universal Cooler machine is also installed to handle a 24-hole service cabinet in the retail part of the Fredericks plant.

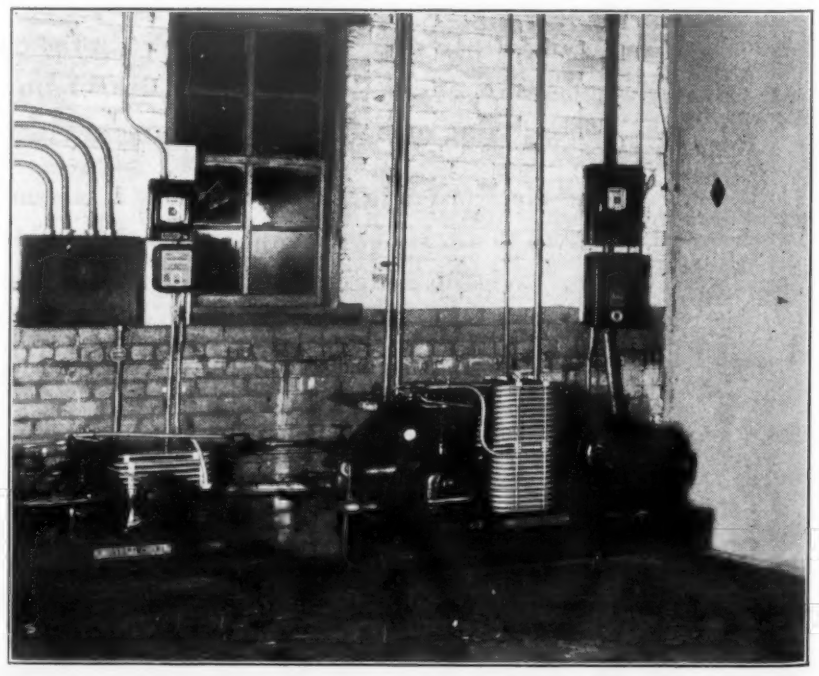
Indianapolis Grocer Installs Hussmann-Ligonier Cases

INDIANAPOLIS—Charles Specker, retail grocer here for the past 32 years, has recently remodeled his store, installing 40 ft. of refrigerated display cases manufactured by the Allied Store Utilities Co.

The Hussmann-Ligonier cases are refrigerated by an Excelsior refrigerating machine.

A York condensing unit refrigerates a large storage cooler in the same market.

Freon Machine Serves Freezer



The 10-hp. Universal Cooler unit serves the freezer and a hardening room; the 1-hp. machine handles a serving cabinet in the retail store.

Filtrine Co. Develops Shell-&-Tube Cooler For Air Conditioning

BROOKLYN—A new large capacity shell-and-tube water cooling tank has just been announced by Filtrine Mfg. Co. here. The cooler is available in capacities from one to 50 tons of refrigeration, according to Chas. F. Hansel, president of the company, and can be used with from one to four condensing units using either methyl chloride or Freon refrigerants.

Mr. Hansel says the new coolers were designed particularly for air-conditioning installations in which chilled water is used rather than direct expansion of refrigerant into the air-cooling unit, and also for industrial refrigeration apparatus requiring large hourly capacities.

The cooler consists of a steel shell with bolted flanged heads, supported in a horizontal position by two cradle supports. The evaporator consists of 1-in. steel tubes with ends securely rolled to the full depth of double grooved steel tube sheets at either end.

To prevent channeling of water and to obtain maximum heat transfer, circular orifice type baffles are used, closely spaced. The water in the shell is forced through the baffle tube holes giving violent agitation and "wiping" the tubes at the same time. Water pressure drop varies from 1 to 2 lbs. depending on water volume.

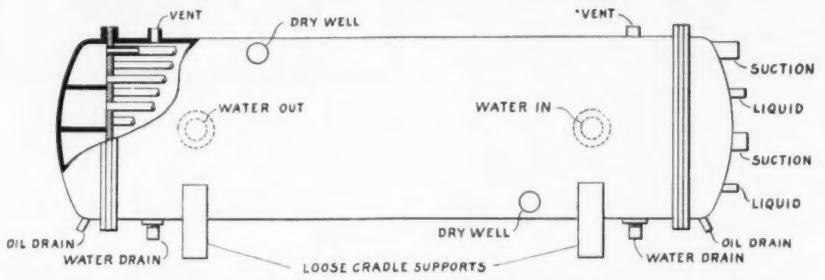
Refrigerant liquid and suction connections are all at one end, separated by one or more partitions in the head, depending on the number of condensing units used. Two dry wells for thermostat bulbs provide for dual temperature control. Large size flanged water connections that can be "bushed" to suitable size on the job, give ample unrestricted water flow. The layout of tubes and header space is such that the refrigerant pressure drop will not exceed ½ lb., Mr. Hansel claims.

"The heat transfer factor in Filtrine shell-and-tube coolers varies in direct proportion to water velocity and mean temperature differences," he states.

Following data is required in building one of Filtrine's new coolers, according to Mr. Hansel: volume per minute, terminal water temperatures, kind of refrigerant, suction temperatures, number of condensing units to be used.

Conditions recommended by Mr. Hansel as efficient and satisfactory: water cooled from 48 to 40° F. with suction temperature at 34° F.

Cooler for Air-Conditioning Work



Filtrine's new shell-and-tube water-cooling tank, shown in the above drawing, is available from 1 to 50 tons refrigeration capacity.

214 ft. of Cases Placed In Market by Dry-Kold

ROCHESTER, N. Y.—One of the largest installations of modern refrigerator and store equipment to be made in this area has been placed in Wegman's here by the "Dry-Kold" Refrigerator Co.

Equipment installed includes 214 ft. of refrigerated display cases, bakery cases, humidified vegetable stands, shelving, wrapping counters, and other equipment incident to a modern food store layout.

The entire job on the main floor is of porcelain.

Special meat storage coolers were installed in the basement.

Hill Dairy Case Has Display Section

TRENTON, N. J.—Just introduced by the C. V. Hill & Co. is a new wall-model dairy refrigerator, built in half-display and half-storage design.

The coil chamber is overhead, and there are three shelf-levels in the display compartment and two in the storage compartment.

This display section is divided into two compartments, one compartment being regularly equipped with two shelves in addition to a pull-out revolving cheese disc, and the other compartment being equipped with three shelves, for one of which a tub rest can be substituted, if desired.

Feature of the construction is a separate cold air duct which permits uninterrupted circulation of cold air all the way to the bottom of the box, no matter how jammed the various compartments may be.

Lighting is by a full-length exterior reflector. Porcelain partitions separate the cheese compartment from the remainder of the box, preventing transfer of odors.

Exterior front and sides, as well as the interior of the display compartment are of heavy porcelain. Insulation is of 4-in. thickness throughout.

Grayson Develops Domestic & Commercial Refrigerators & Beer Coolers Using Solid Carbon Dioxide

ATLANTA—Refrigerating systems employing solid carbon dioxide for domestic refrigerators, beer coolers, commercial refrigerators, and ice cream cabinets, have been developed by Ralph V. Grayson, consulting engineer of this city.

In the household refrigerator, a conventional type of cabinet is used, with the refrigerating mechanism enclosed in a dome top.

The cooling unit consists of three telescoping steel tanks. The inner tank contains the refrigerating medium and is built to withstand a working pressure of 50 lbs. per sq. in. The ice cube trays are beneath this unit and communicative with the interior of the cabinet by means of a sliding door, which insures control of the freezing and eliminates heat losses.

Insulating Space

Outer and intermediate shells form an insulating space in the form of a high vacuum. The air in the cabinet is passed around between the insulation and the inner tank and is controlled by a thermal unit which operates a damper mechanism.

Exhausted gas from the solid CO_2 operates a turbo circulator in the bottom of the refrigerator, which motivates a circulating fan insuring uniform temperatures throughout the cabinet. The exhaust CO_2 is then passed to the insulation area.

In the beer cooler, the solid CO_2 is employed both to refrigerate and to carbonate the beer.

Solid carbon dioxide is compressed in its manufacture to a point where 1 lb. of solid CO_2 equals 8.5 cu. ft. of gas. As the solid CO_2 is sublimated carbon dioxide gas is given off and this gas supplies the necessary pressure to keep the beer properly carbonated.

For cooling the beer, a secondary refrigerant is used, this secondary refrigerant being directly cooled by the solid CO_2.

In the ice cream cabinet, refrigeration is accomplished by a solid CO_2 unit which is placed in one end of the cabinet, adjacent to the sleeves.

Cooling is effected by means of an auxiliary refrigerant through an automatic control system operated by a thermal unit and a special type quick opening valve. A movement of ¼ in. by the thermal unit opens the valve 100 per cent.

Where thermo-syphon cooling is used, the pressure required for operation of this unit is created by the sublimation of the solid CO_2. An auxiliary pressure tank is used to insure constant pressure during the short cycle of recharging the unit.

Blower Circulates Air

A feature of the system is the circulation of the air in the coil area by means of a small turbo-blower which keeps the temperature uniform and breaks up the stratification of air in the cooling area.

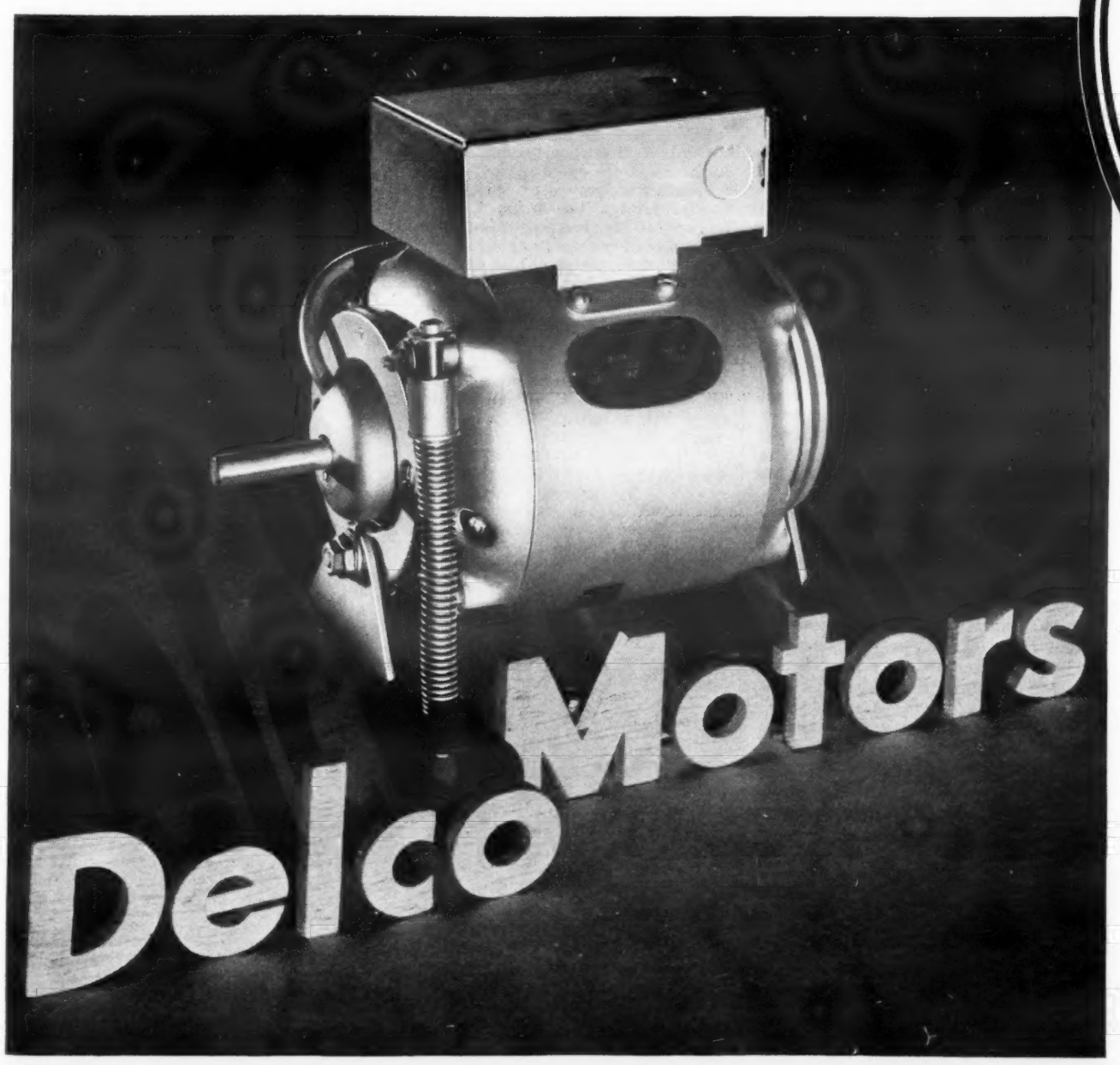
Normal consumption of solid CO_2 for the standard 8-hole storage cabinet is from 9 to 11 lbs. of ice per 24-hour day, according to Mr. Grayson.

The same unit that is used in the ice cream cabinet can also be used in the "universal" commercial refrigerator cabinet, so-called because it provides space for fish, milk, meat, and low-temperature storage.

This cabinet is designed to use tills in lieu of doors. The milk dispensing feature can be operated by coins if desired.

Controls are three in number, with a possible range of from 0° F. to 50° F.

THESE 4 DELCO FEATURES help to satisfy you and your customers



1 *Automatic* Belt Tightener—Delco refrigerator motors are now available with this new device which compensates for belt stretch and assures proper tension on the belt at all times. The snubber provides the correct amount of friction in order to prevent motor oscillation.

2 *End-Play* Take-Up—Objectionable end-play noises have been abolished by a special cork end-play take-up which cushions the movements of the shaft.

3 *Vulcanized Rubber* Cradle Mounting—The rubber ring is vulcanized between the steel plates and effectively absorbs all the objectionable motor vibration, resulting in a quiet installation. The rubber is held permanently in place by being vulcanized to both plates.

4 *Sealed* Lubrication—stops loss of oil during shipment, installation and operation. A patented oil reservoir prevents over-oiling, seepage and any leakage on the windings.

The features listed above, plus Delco's experienced engineering and precision manufacture, make Delco motors an ideal selection for the refrigerator manufacturer, and also help to gratify the refrigerator dealer and owner. Dealers want satisfied owners. Owners want quietness and dependability. Delco motors meet the requirements of *both*. As a result—Delco motors are a logical choice for the manufacturer—a fact which accounts for their widespread acceptance in the electric refrigeration field.

DELCO PRODUCTS CORPORATION, DAYTON, OHIO

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office
Copyright, 1934, by Business News Publishing Co.
Published Every Week by
BUSINESS NEWS PUBLISHING CO.
5229 Cass Ave., Detroit, Mich. Telephone Columbia 4242.
Production Dept., 550 Maccabees Bldg., Columbia 4245.

Subscription Rates—U. S. and Possessions and all countries in the Pan-American Postal Union: $3.00 per year; 2 years for $5.00. Canada: $6.00 per year (due to special tariff). All Other Countries: $5.00 per year (U. S. Money)

F. M. COCKRELL, *Publisher*

GEORGE F. TAUBENECK, *Editor*
JOHN T. SCHAEFER, *Engineering Editor*
PHIL B. REDEKER, *Assistant Editor*
ELSTON D. HERRON, *Staff Writer*
A. J. CUTTING, *Statistician*

GEORGE N. CONGDON, *Business Manager*
HOWARD W. MATEER, *Advertising Manager*
JOHN R. ADAMS, *Production Manager*

Member, Audit Bureau of Circulations
Member, Associated Business Papers
Member, Periodical Publishers Institute

VOL. 13, NO. 11, SERIAL NO. 295, NOV. 14, 1934

Housing Program Gets Going

CALLED in last week by the factory for a council-of-war on the 1935 campaign, Kelvinator distributors almost uniformly had one encouraging report to make about business conditions in their territories: the Federal Housing Program is catching on, and is providing money for cash business which might not have been obtained otherwise.

Retail sales, which had slumped off badly early in the fall, are apparently on the upgrade again; and distributors are attributing this small-but-sure rise in the sales curve to the readiness with which the American public has taken up with the idea of borrowing *at reasonable rates and without collateral* for home modernization. Tacked-down refrigerators are eligible for these loans, and because of the great public desire for electric refrigeration, many households are taking advantage of this opportunity to put electric refrigerators into their homes at comparatively small cost.

Cheaper Than Time Payments

The discount rate charged for these home modernization loans (these are private—not government—loans, and are made by banks, building and loan associations, contractors, and occasionally national manufacturers) is $5 per $100 per year maximum, deductible in advance annually on the whole amount lent. Since the amount is to be repayed in monthly instalments, the return to the lender on average funds outstanding may be around 9.7 per cent.

Granted that the borrower pays this much for the use of the money (in many cases it is less), he still can get his electric refrigerator cheaper by borrowing on this plan, and paying cash for the refrigerator, than he can by buying it on the instalment plan through a time payment financing agency.

He also does not need to fear that the refrigerator will be taken away from him should he get into a jam and not have the money to pay the monthly instalment; for he has paid cash for the refrigerator and obtained possession. And his loan, as has been mentioned, is not secured by collateral, but is strictly a "character loan." (The government insures these modernization loans against loss by assuming risk of non-repayment up to 20 per cent of all the loans made by any lender.) Most loans are for two years, but may run as high as five years.

900 Individual Loans Reported Daily

An authentic Washington dispatch dated Nov. 1 declares that about 30,000 individual loans, totalling about $13,000,000, for home modernization have been reported to the Federal Housing Association. Approximately $2,250,000 in loans are being made weekly, with an average of 900 individual loans reported daily. The report estimates that between now and spring these loans "may total 50 millions, producing at least 200 millions of business activity, perhaps much more."

Here are some individual notes on home modernization work in various cities, indicating how the home modernization idea has caught the public fancy, and showing the opportunities it has opened for distributors and dealers:

Volunteer canvassers from Evansville, Ind., companies, working with the local Better Housing Committee, discovered so many immediate jobs that they were forced to suspend the canvass for several days while they got busy doing the work they had uncovered in their survey.

On the first day of the house-to-house canvass in Charleston and Greenville, S. C., a total of $98,000 worth of pledges for modernization work was obtained.

Orange, N. J., property owners have pledged themselves to undertake $200,900 worth of modernization work.

In Raton, N. M., a town of 6,000, modernization work amounting to $23,105 is under way. Almost $4 worth of modernization a person!

The first day of the Kansas City, Kan., canvass netted first-class pledges worth $36,707.

Over $200,000 worth of modernization work has been done or started in Syracuse, N. Y., as a result of the Better Housing Program, according to Fred E. Norton, secretary of the Syracuse Chamber of Commerce. Mr. Norton expects modernization expenditures to reach a total of a million dollars.

Canvassers have averaged better than a job out of every two calls in St. Joseph, Mo., with 2,000 jobs unearthed out of 3,852 calls.

In San Francisco, calls on property owners during the last week in October produced 8,500 jobs, representing a total of approximately $3,000,000 worth of modernization work.

New construction has not yet got under a great deal of headway, but with government insurance of mortgages and of savings and loan associations (as provided in Titles II and IV of the Federal Housing Act), with the resulting lowering of home financing costs, it is confidently predicted that considerable new home building will be done in 1935 and 1936. Air-conditioning equipment salesmen please note.

WHAT OTHERS SAY

Industry Advertising Comes Back

COOPERATIVE advertising in behalf of an entire industry was formerly one of the most important activities in the field. During the depression years most of these campaigns disappeared, individual requirements taking precedence over industry objectives. It is an indication of a return to more nearly normal conditions that group advertising is again coming to the fore.

In the Nov. 3 issue of *Advertising Age*, for example, the following cooperative programs were reported: renewal of campaign for Financial Independence Week on behalf of life insurance; new campaign for radio manufacturers to replace obsolete receiving sets; national campaign for gas appliances to be sponsored by American Gas Association, in connection with FHA drive for home modernization; revival of campaign of Typewriter Educational Research Bureau, to develop home market for writing machines.

This returning activity—and the campaigns mentioned are of course but a few of those which are actually in progress or are under discussion—is significant of at least two factors: one is the improvement in business and sales opportunities which justify extending advertising effort beyond immediate individual requirements, and the other is the recognition on the part of manufacturers in many fields of the importance of joint action to advance the interests of the industry as a whole.

In some cases, as in the laundry field, where the American Laundry Machinery Co. has sponsored advertising in behalf of its customers, the laundryowners, industry advertising is undertaken by single companies, but in most instances the task must be assumed by all of those who may be expected to benefit from its results. Thus organization effort is required, and greater difficulty is obviously experienced in bringing together all of the groups concerned than is needed to develop a campaign for a single advertiser. That this again can be successfully accomplished is one of the most heartening indications of the restored morale of American business.

Perhaps the discussions of industry needs and objectives developed during the NRA code discussions may be credited with some of the current interest in cooperative advertising. Many of the codes provide opportunity for this kind of advertising; at any rate, it is evident that business men are more than ever interested in working together for the successful solution of their common problems.

Changing and broadening markets will create opportunities for the successful application of industry advertising in the period just ahead. We may therefore confidently expect to see many interesting developments of the cooperative advertising idea. Many old campaigns will be revived, many new ones launched; and some lagging industries, whose members are finding sales promotion difficult because of fundamental difficulties, will look to advertising to simplify their tasks, and to provide a background for more profitable advertising in behalf of their individual units.—*Advertising Age.*

LETTERS

Mr. Lilienthal Answered

Hopkins Equipment Company, Inc.
Norge—Atwater Kent
418 W. Peachtree Street, N. W.
Atlanta, Ga.

Editor:

It is needless to say that one has to hear you talk before but one large manufacturers Refrigerator Convention to well realize that you certainly have the pulse of the Refrigeration business well in hand. (I could have just as easily stated that you are damn smart when it comes to the Refrigeration Industry).

Assuming that you are the author of the editorial in the October 31 issue of ELECTRIC REFRIGERATION NEWS, wherein you answer Mr. David E. Lilienthal as to your justification of your various articles, I do want to say that this article should be looked upon by those who earn their bread and meat from refrigeration as a "master piece."

It is our sincere hope that these new thoughts expressed and old thoughts repeated in this editorial will find their way into the hands of Mr. Lilienthal, as well as into the hands of those dignitaries of a higher authority, including our Hon. Franklin D. Roosevelt.

It does seem that any fair minded executive (even a politician), that the government's entrance into business such as the TVA and EH&FA could easily recognize that it is a perpetration against the very principle that the new deal is fighting for—that this entrance into business has already seriously jeopardized a well justified industry and promises to more or less paralyze the same industry, along with thousands of independent merchants.

If it is in order, and consistent with your policy, we would like permission to reprint (multigraph or mimeograph) this editorial appearing in Oct. 31 issue of ELECTRIC REFRIGERATION NEWS, page 8.

In closing, let me say that it is my sincere hope that a few other trade papers will muster up enough intestinal fortitude to express in their editorials the injustice of the activities of TVA and EH&FA.

W. D. V. HOPKINS.

Courage and Backbone

General Equipment Corporation
Distributor of Norge Products
584 Commonwealth Avenue
Boston, Mass.

Editor:

You and your paper ELECTRIC REFRIGERATION NEWS are to be most highly complimented on your editorial in the October 31 issue of your paper.

It took courage and backbone to write such an editorial. It is just too bad that many more people haven't more of these qualities.

No one wants to criticise the Government just as an all around sport, but when they are wrong some one ought to come out and say so.

I am not given to writing testimonial letters, but while I am at it I want to criticise your editorial of a couple of weeks back praising Mr. Crosley for advising his distributors to sell at less than cost—just as much as I praise your present editorial.

The two are not consistent.

J. G. WADDELL, President.

Answer: Thank you for your praise. As to Powel Crosley's suggestion that his distributors try to land department store outlets as "prestige accounts"—even if these accounts were not themselves profitable to distributors—it was *reported*, rather than praised by ELECTRIC REFRIGERATION NEWS. Crosley distributors, the editorial pointed out, have enjoyed *profitable* "plus business" from other retailers who followed the lead of the department stores. Thus Crosley has simply extended the "loss leader" idea to wholesaling.

Should We Omit 'Electric'?

Driice Appliances, Inc.
205 E. 42nd St., New York City

Editor:

Will you forward to the writer a copy of ELECTRIC REFRIGERATION NEWS in which is published a description of our refrigerating apparatus.

It seems to me that from now on, the "Electric" may have to be omitted from the name of your publication.

C. E. QUINN, President.

Answer: We have given consideration to the advisability of omitting the word "Electric" from the name of the paper.

Sometime ago we changed the type arrangement of the banner in such a way as to enlarge the words "Refrigeration News" and subdue the word "Electric."

We had noted that most readers refer to the paper as "Refrigeration News" and we felt that the new design would further encourage the usage of the simplified title. Furthermore, it would pave the way for dropping the word "Electric" entirely if such a procedure appeared to be desirable.

It is true that ELECTRIC REFRIGERATION NEWS now covers practically all phases of refrigeration with the exception of heavy industrial applications, such as ice making and cold storage. We have not felt it necessary to give complete coverage to these branches of the industry because they are served by a number of other publications and because most of our readers are not directly interested in those fields.

We believe, however, that it will be advisable to retain the word "Electric" for the time being because the term "Electric Refrigeration" signifies a field and a type of equipment which is very definite in the minds of people generally, as well as being a term which has a definite significance to members of the trade. In other words, it signifies a *market* quite as much as it does a particular type of equipment.

Our mind is open on the matter and it is possible that we may make the change sometime in the future.

Conditioner Data Useful

General Electric Company
1 River Road
Schenectady, N. Y.

Editor:

We certainly appreciate the fine job you have done in collecting and publishing the data on air-conditioning equipment specifications of principal manufacturers. Our air-conditioning department says that this information will be very useful to them and that it would have taken considerable time and expense for them to have collected it themselves. We feel that you have rendered a real service to us and to others in the industry.

We should like to obtain half a dozen copies of the September 26, October 31, and the November 7 issues of ELECTRIC REFRIGERATION NEWS and shall be glad to have you bill us for them. We wish to include them in copies of our study of air-conditioning equipment.

E. J. KLOCK,
Market Research Division.

Westinghouse Errata

Westinghouse Electric & Mfg. Co.
East Pittsburgh, Pa.

Editor:

We wish to call your attention to several errata in the list of specifications on our air-conditioning units which appeared in the Oct. 31 issue of ELECTRIC REFRIGERATION NEWS. Already we have received requests from our dealers for confirmation of the incorrect data, and for the benefit of these and other readers of your publication, may we ask that you publish the following list of corrections in the next issue of ELECTRIC REFRIGERATION NEWS:

Self-contained cabinet type conditioner Model No. SW-05.
Compressor
Type of compressor motor.....Capacitor for single phase. (Polyphase units are not available.)

Remote floor-type conditioner Model No. EH-12.
Price $249

Suspended type conditioner model No. ES-10.
Blower
Size of blower motor (hp.) 1/50

Duct type conditioners

Model No.	**ES-22**	**ES-42**	**ES-62**
Blower			
Diameter of wheel (in.)	(1) 9	(2) 9	(3) 9
Refrigeration Capacity (B.t.u./hr.)			
Dehumidification	18960		
Sensible cooling	39840		
Total capacity	58800		
Heating Capacity (B.t.u./hr.)	148800		

In explanation of the figures given for the diameter of the blower wheel used on the duct type conditioners, may we say that one blower is used on the model ES-22, two blowers on the ES-42 and three blowers on the ES-62, each of which have a 9-in. diameter blower wheel.

JAS. W. SPEER, Mgr.,
Commercial Air-Conditioning Products.

Editor's Note: Some of the errors noted above were made by the editorial staff in interpreting the data submitted by Westinghouse engineers. Most of the mistakes, however, were typographical errors in the original specifications forms which Westinghouse forwarded.

Strong for Copeland

Potthast's
101 San Pedro at Main
San Antonio, Tex.

Editor:

Please change my subscription address to that given on the letterhead.

This change is due to my having formed an organization and taken over Copeland refrigeration distribution for southwest Texas, after having sold Copeland since the summer of 1926 for others.

We still believe strong in Copeland and feel that with a little time that it again will be a strong factor in our territory.

ELECTRIC REFRIGERATION NEWS has been a welcome item in my refrigeration sales, and I don't believe I have missed but a few issues since you started publishing it.

E. P. POTTHAST.

COMMERCIAL REFRIGERATION

G-E Refrigerated Truck Uses Power Take-Off Drive & Heat Exchanger

SCHENECTADY — General Electric's new refrigerated truck line embodies a series of new features including a specially designed power take-off drive with over-running clutch embodied in driving pulley; a heat exchanger which eliminates frosting of the suction line; and a coil-free interior compartment.

The 1935 model body, available in three sizes, is intended for routes which have a running time of 40 per cent or more. Cruising radius is unlimited, because the electric system provides a full refrigerating capacity while on the road. Operating cost is claimed to be low—averaging approximately 5 kwh. for a night layover, and less than one additional gallon of gasoline a day on normal 75 to 100-mile radius.

Through a standard S.A.E. opening in the transmission case, power is transferred to the take-off and then to the driving pulley through the drive shaft which is fitted with a double ball-bearing journal box and two needle-bearing universal joints.

An over-running clutch is embodied in the driving pulley. Through this arrangement the inertia of the generator armature is utilized to disconnect the auxiliary load from the truck transmission when gears are being shifted. This allows the gearing to slow down in a normal manner and prevents the interference that would be caused if the refrigerating machinery remained connected during the gear-shifting operation.

The pulley is connected to a generator, located in the machine compartment at the front of the body by a multiple V-belt. A metal housing protects the belt from mud and dust.

The generator is a compact unit which provides alternating-current power to the motor driven condensing unit during road operation. A plug-in receptacle on the control case provides means of taking power from the regular garage circuit during storage and pre-cooling.

Advantages of the electric drive over the straight mechanical drive are pointed out by G-E engineers as follows: it provides a means of automatic control; through the motor-overload protection it provides against overloading and against creating excessive pressure during "pull down" on a hot body; it provides a cushion between the compressor and the erratic variations of truck-engine speed.

The condensing unit assembly consists of compressor, condenser, pressure-type temperature control, refrigerant tank, and induction motor—all mounted on a common base and located adjacent to the generator in the machinery compartment. Freon is the refrigerant employed.

The heat exchanger is simply a section of the suction line. The section is made large enough to permit its carrying the liquid line through which the liquefied refrigerant flows from the condenser to the expansion valve.

By means of this arrangement, the low-temperature gas in the suction line is used to cool the warm refrigerant in the liquid line, thereby accomplishing a gain of about 10 per cent in thermal efficiency and eliminating frosting of the suction line.

The heat exchanger and expansion valves are arranged in the forward bulkhead. Access to them is gained through removable covers.

The cooling coils are firmly soldered to the outer surface of the refrigerated compartment. Advantages of this arrangement are said to be as follows:

Interior of the load compartment is entirely free from obstructions; coils are located where they are protected from damage; heat leakage through the insulation does not enter the refrigerated compartment, being absorbed directly by the cooling coils before it can reach the interior; since the coils are on the outer surface of the compartment lining, there is no possibility that a leak might admit the refrigerant gas into the load compartment.

Cooling coils are made of a continuous piece of copper tubing. There are no piping connections, such as are used with conventional finned tube evaporators.

Body construction is welded, all-steel. Insulation used is Thermocraft, same as is used in G-E domestic refrigerators. The insulation is sealed in a steel insulation compartment.

Three standard body sizes are available—315 gal., 420 gal., and 540-gal. The machinery compartment on all bodies is located in the forward end.

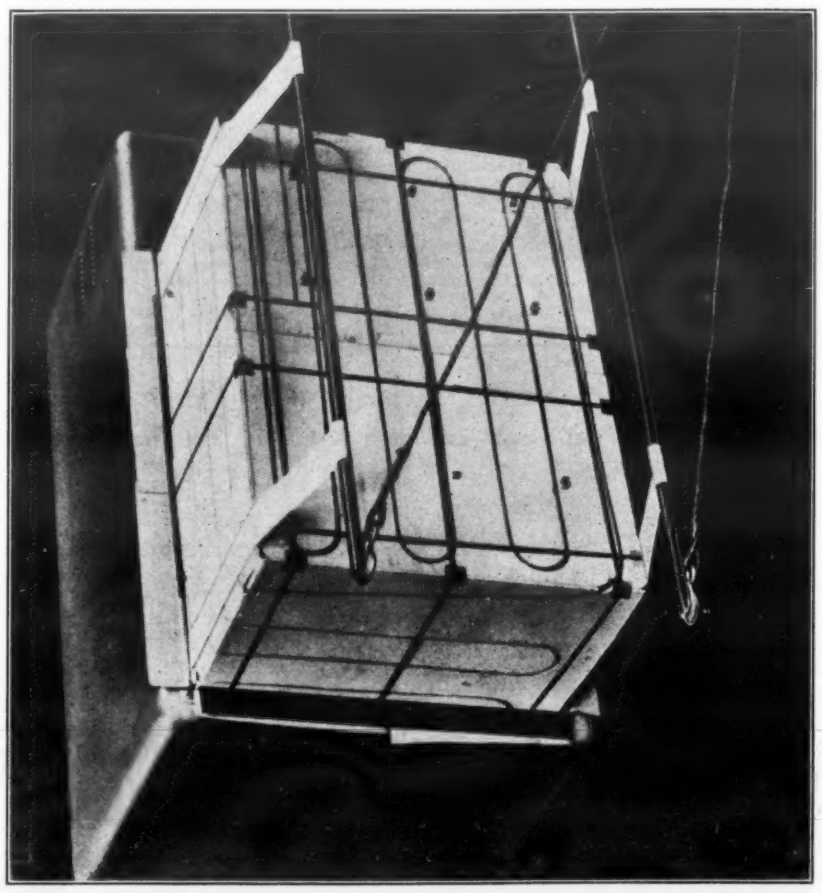
Light Paint Makes Truck Interior 8° Cooler

WILMINGTON, Del.—Engineers in the du Pont laboratories here have given an answer to the question asked by operators of refrigerated trucks to the effect "how many degrees cooler would the inside of any given truck body be, if the outside of the body and the roof were painted white or aluminum, against black or other dark colors."

The du Pont experts declare that tests indicate that, in general, white produces a temperature which is about 8° F. lower than that produced by black or any dark-colored finish. Other light colors, such as aluminum, yellow, etc., are practically as effective as white in this respect.

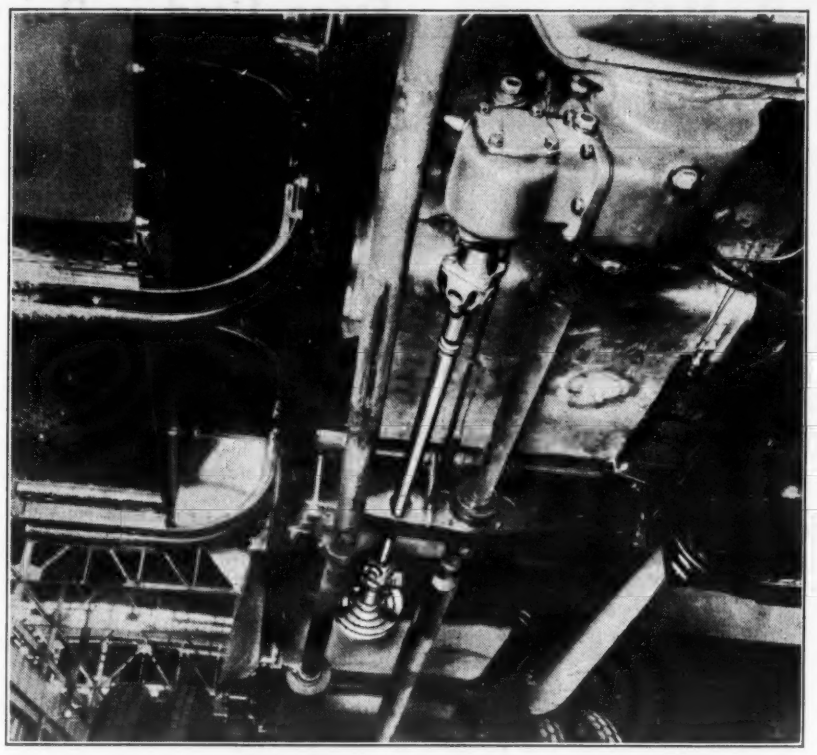
These tests were conducted in the open, and since the average truck body is closed and receives little ventilation, it is safe to conclude, say the du Pont men, that the use of white or light-colored finishes on commercial vehicles will result in temperatures (inside the body) nearly 10° F. lower than with dark colors.

Inner Liner of G-E Truck



The inner liner and evaporator assembly are being lowered into place in the welded steel shell of the new G-E refrigerated truck.

Power Take-Off Drive



The above picture, taken from the engine end of the truck, shows the power take-off drive for the generator on G-E's new truck.

York to Cool Chocolate In Hershey Plant

HERSHEY, Pa.—A gigantic, ammonia cooled milk storage tank, said to be the largest of its kind in the world, was recently installed by the York Ice Machinery Corp. at the plant of the Hershey Chocolate Corp.

This huge tank will be used, in conjunction with a York internal tube type milk cooler, for the storage of milk prior to processing for the manufacture of milk chocolate.

The cylindrical container, of 12,000 gallons capacity, weighing 18,000 lbs., measures 9 ft. 10 in. in diameter and 21 ft. 9 in. long, and is constructed of No. 14 gauge chrome nickel alloy.

Brewery Installation Sells Equipment

ST. JAMES, Minn. — Taking their prospects to see a Kelvinator beer cooling installation in the St. James Bottling Works here has meant increased business to more than one Kelvinator dealer in St. James and neighboring towns.

The installation necessitated refrigerating equipment to serve a beer storage cooler 40 feet long, 24 feet wide and seven feet high. To convince the owner, Francis Klaras, that adequately low temperatures could be obtained, the Kelvinator representatives actually froze water on top of a barrel of beer placed in the room for testing purposes.

Under normal operation the temperature in the cooler is held between 36 and 38° F. The room, which has a capacity of five carloads of beer, is insulated with four inches of cork.

A Kelvinator 3-hp. methyl chloride high suction pressure condensing unit with pressure control and three Kelvinator forced convection units were used in the installation, which was put in by the Community Radio Shop.

Kelvinator Equipment Used In High School

CHICAGO—The installing of Kelvinator equipment in the world's largest high school, Lane Technical High School here, is one of the latest achievements to be added to the refrigeration sales record of Commonwealth Edison Co.

Five Kelvinator compressors and six special bare pipe coils were used in the refrigeration installation. These are now in the two service boxes in the school's kitchen and two large display counters in the cafeteria.

Men Pay for Them . .

WOMEN may buy refrigerators because of fine appearance, large storage capacity, or ease of finish maintenance. Men pay for them more cheerfully because of mechanical excellence and freedom from annoying difficulties. *Bonderizing* under the final finish helps to satisfy these "buying" desires. It eliminates finish failures. It provides greater adhesion of the finish and prevents the formation of rust. It is an added feature that satisfies the man who pays.

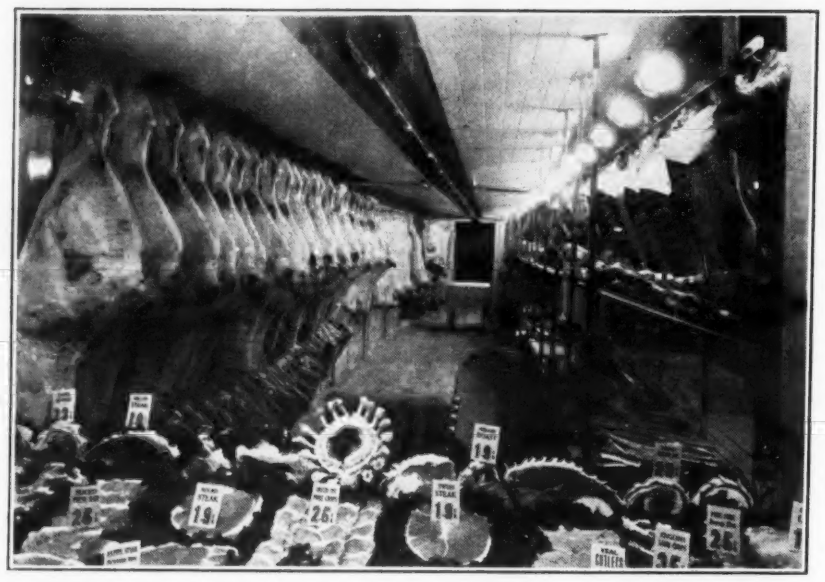
Parker Processes are the result of 18 years of continuous research, looking to improved technic of rust prevention and better finishes for iron and steel products. Literature describing these processes will be sent on request to manufacturers and technical men.

PARKER RUST-PROOF COMPANY
2197 EAST MILWAUKEE AVENUE, DETROIT, MICHIGAN

PARKER
RUST-PROOFING
processes
BONDERIZING
PARKERIZING

COMMERCIAL REFRIGERATION

Sidewalk View of a Meat Cooler



Passersby get this view when they look into a window of Jack Cinnamon's new market in Detroit, which is McCray equipped.

* * *

McCray Cases Used in Large Food Store

DETROIT—One of the largest and most modern food markets to be found anywhere in the country has just been opened at Woodward and Glendale Aves. here by Jack Cinnamon. It is completely equipped throughout with McCray commercial refrigerator and store fixture equipment, with refrigeration being furnished by Lipman systems.

One of the prime features of the store is the huge display and storage cooler, 70 ft. long by 9 ft. deep, which lines the left wall of the store. This cooler is built right up to the store display window on the street front, so that passers-by can look right into the cooler and observe the meat cutters at work. Auxiliary equipment in this meat cooler includes adjustable display shelving, chromium plated rails, tracking and dial track scale.

Directly in front of the cooler and also visible from the street extends the 65 ft. of McCray refrigerated meat and fish display counter, with special illumination features.

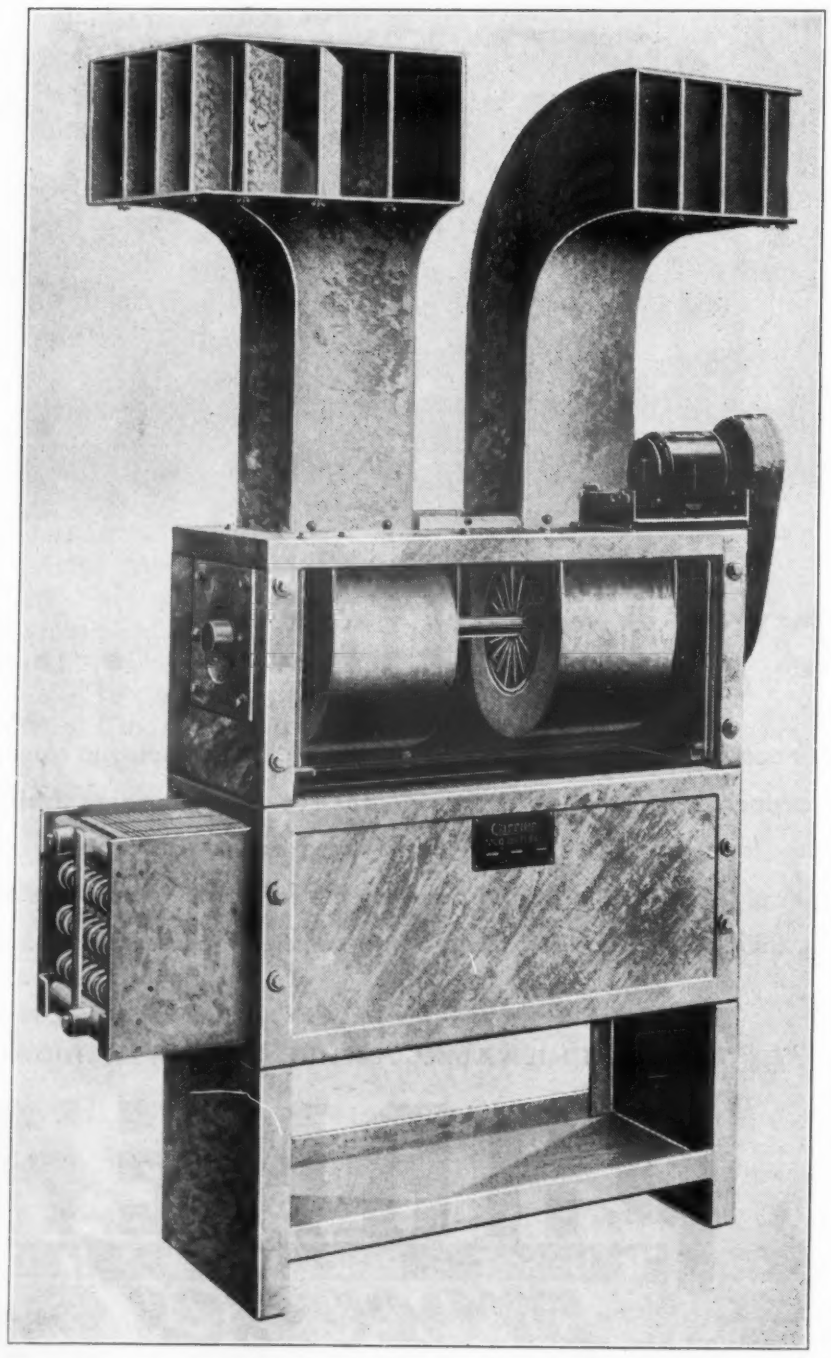
Dairy and delicatessen items are sold from an octagonal "island" 32x20 ft. Display cases form the outer sides of the island and within the enclosure is placed a combination service and egg display counter.

In the storage room at the rear of the store McCray has installed a special cooler measuring 32x6 ft. This cooler is rendered doubly useful by means of its reinforced top, which utilizes the space above for storage purposes.

McCray also designed and built equipment for a lunch and soda department, a candy and cookie section, a dried fruit counter, a 50-ft. vegetable display stand with illuminated canopy, fruit display benches, bakery department, and shelving with illuminated frieze for canned goods.

A feature of the store operation is the fact that it is completely equipped with an inter-communicating loudspeaker telephone system for dispatching orders, instructions and general information.

For Commercial Applications



This new Carrier "Cold Diffuser," available in capacities from 1 to 30 tons, is designed to distribute air in all directions.

Direct Expansion of Freon Used in Dairy

DETROIT—Universal Cooler Corp. has modernized the plant of the Livonia Farmers Dairy Co. on Telegraph Road here with installation of two 10-hp. Freon condensing units in a new hook-up to provide direct expansion refrigeration throughout.

The plant formerly operated with a brine aerator, which was supplied from a 2,000-gal. brine tank. The brine tank was placed in the milk storage room, and with the aid of some sidewall pipe coils, served to refrigerate the storage room.

In the new system a 4,000-lb.-per-hour Cherry-Burrell direct expansion aerator has replaced the brine aerator, and two Trane unit coolers have replaced the brine tank in the storage rooms, the sidewall pipe coils being retained.

Both of the Freon refrigerating machines are connected to the aerator, and one of the units serves the milk storage room. Separate liquid and suction lines are run to the milk storage room, and are there teed off to handle the unit coolers and the sidewall pipe coils.

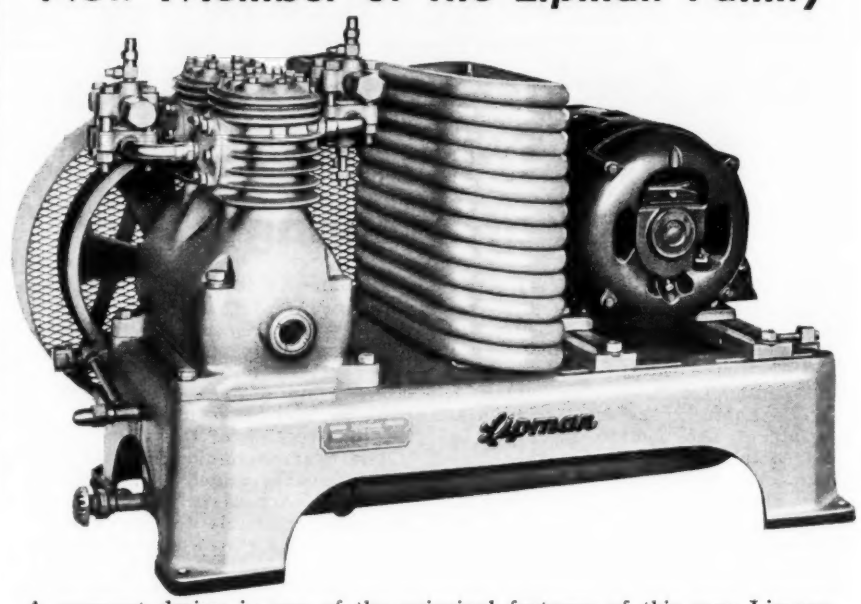
One of the condensing units cuts out when the aerator isn't working, thus bringing about a saving in the operating cost.

McGurn to Manage Sales Of Marlo Cooling Coils

ST. LOUIS—T. A. McGurn has been appointed sales manager of the Marlo Coil Co., manufacturer of refrigeration coils, A. T. Marlo has announced.

Mr. McGurn has been engaged in the refrigeration industry for the past 20 years.

New Member of the Lipman Family



A compact design is one of the principal features of this new Lipman model 503, 5-hp. methyl chloride condensing unit.

York-Freon Machine Used in Market

CLEARFIELD, Pa.—York Ice Machinery Corp. has installed a 2-hp. Freon compressor and fin coils to refrigerate various types of equipment in the Florida Fruit Market here.

The refrigeration equipment handles an 8x8x8-ft. meat cooler at 38° F.; a 6¾x6¾x6¾-ft. vegetable cooler at 38° F.; and 14 ft. of top display case at 41° F.

At a 20° evaporator temperature with 90° air the unit has a capacity of 1,200 lbs. I.M.E. per hour.

Hussmann & Frigidaire To Equip Market

ANDERSON, Ind.—Hussmann-Ligonier commercial refrigerator equipment and Frigidaire commercial condensing units will be installed in this city's first drive-in-market, now being built by Mace & Son, local retailer.

The 42 ft. of Hussmann-Ligonier display case equipment is to be installed by F. D. Gardner, Indianapolis distributor for Allied Store Utilities.

Two Frigidaire units serve the display cases, as well as a large built-in storage cooler.

Additional Specifications of Commercial Condensing Units

Supplementing specifications published in previous issues (22 makes in Sept. 12 issue, four in Sept. 19 issue, one in Oct. 10 issue).

Frigidaire

Frigidaire Corp., Dayton, Ohio.

Model Nos.	1A	1B	F1B	1C	F1C	2C	F1CC	3D	F2D	4E	F3E	5F	F4F	6G	F5G	6H	F6H	F6J
Refrigeration capacity*	193	221	252	317	325	339	365	578	639	868	893	1140	1300	1716	1850	2170	2340	3160
Motor size (hp.)	⅙	¼	¼	⅓	⅓	⅓	⅓	½	½	¾	¾	1	1	1½	1½	2	2	3
Compressor speed (r.p.m.)	435	485	320	720	430	405	390	436	440	450	415	425	385	475	430	575	385	545
Bore (in.)	1½	1½	1½	1½	1½	1¾	1½	1¾	1¾	2⅛	1¾	2½	2¼	2½	2½	2½	2½	2½
Stroke (in.)	1½	1½	1½	1½	1½	1¾	1½	2½	1¾	2⅝	2½	2⅝	2⅝	3½	2⅝	3½	3½	3½
No. of cylinders	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Condensing unit charge of refrigerant (lbs.)	3	3	3	3	3	3	3	3	3	5	5	5	5	5	5	8	8	8
Pump down capacity of receiver (lbs.)	13	13	13	13	13	20¼	20¼	20¼	20¼	35	35	35	35	35	35	48¾	48¾	48¾
Quantity of oil in system (lbs.)	1¼	1¼	1¼	1¼	1¼	2	2	2	2	3	3	3	3	3	3	3	3	3
Overall Dimensions (in.)																		
Width	17¼	17¼	17¼	17¼	17¼	28	28	28	28	32¾	32¾	33	32¾	32¾	32¾	36¾	36¾	36¾
Depth	15	15	15	16½	16½	21½	21½	23½	23½	26	26	27⅞	27¾	27¾	27¾	32¼	32¼	32¼
Height	14½	14½	14½	14½	14½	19⅛	19⅛	19⅛	19⅛	22¼	20⅞	22½	22¼	24¼	22¼	24⅜	24⅞	24⅞

Model Nos.	W2C	FW1C	W3D	FW2D	W4E	FW 3E	W 5F	FW 4F	W 6G	FW 5G	FW 6H	FW 6J	5 Hp. FW 701	7½ Hp. FW 702	10 Ho. FW 702
Refrigeration capacity*	442	438	657	725	1013	1150	1535	1670	2260	2600	3100	4420	5820	9525	11900
Motor size (hp.)	⅓	⅓	½	½	¾	¾	1	1	1½	1½	2	3	5	7½	10
Compressor speed (r.p.m.)	505	505	505	505	485	495	510	485	580	505	455	655	385	610	750
Bore (in.)	1¾	1½	1¾	1¾	2⅛	1¾	2½	2⅛	2½	2½	2½	2½	3⅛	3⅛	3⅛
Stroke (in.)	1¾	1½	2½	1¾	2⅝	2½	2⅝	2⅝	3½	2⅝	3½	3½	3⅛	3⅛	3⅛
No. of cylinders	2	2	2	2	2	2	2	2	2	2	2	2	4	4	4
Condensing unit charge of refrigerant (lbs.)	3	3	3	3	4	5	4	5	4	5	8	8	8	15	15
Pump down capacity of receiver (lbs.)	15¾	15¾	15¾	15¾	25¾	25¾	32¾	32¾	32¾	32¾	57¼	57¼	65	130	130
Quantity of oil in system (pts.)	2	2	2	2	3	3	3	3	3	3	3	3	8	8	8
Overall Dimensions (in.)															
Width	28	28	28	28	32¾	32¾	36⅞	36¾	36⅞	36¾	38½	38½	65	65	65
Depth	17½	17½	17½	17½	19⅝	19⅝	19⅞	19⅞	19⅞	19⅞	22	23	33½	33½	33½
Height	18¾	18¾	19⅛	19⅛	22½	20⅞	23½	23	25½	23	27½	27½	39	39	39

* * *

Compressor
Type of system....Open
Type of compressor....Reciprocating
Compressor drive....Belt
Type of shaft seal....Bellows
Cylinder head cooled by....Air, except models W4E, W5F, W6G, water cooled
Type of lubricating system....Models 701 & 702—splash; others—forced feed
Type of compressor oil....Mineral
Viscosity of compressor oil....Varies with refrigerant and application

Refrigerant
Refrigerant used...F & FW models—F-12; others—sulphur dioxide

Valves
Type of piston valves....Disc
Type of discharge valves....Disc

Condenser and Liquid Receiver
Condensing medium....W models—water; others—air
Type of condenser....Water cooled—shell and tube; air cooled—finned tube
Location of condenser....Water cooled—below frame; air cooled—on long side of frame at back
Type of liquid receiver....Horizontal
Models with fusible safety plug....All except models 1A, 1B, F1B, 1C & F1C
Models with refrigerant filter....All

Materials used
Cylinder block....Semi-steel
Pistons....Cast-iron
Condenser tubing....Air cooled—copper finned; water cooled—admiralty metal
Condenser shell....Steel

Control
Make of control....Frigidaire
Type of control...Low pressure standard, thermostat optional
Models with high pressure cut out....Air cooled—½ hp. and up; water cooled—all
Type overload cut out...Thermal element
Make water regulating valve...Frigidaire

* Refrigeration capacity given in lbs. of ice-melting effect per 24 hours' operation under these conditions: a suction gas pressure corresponding to a temperature of 15° F. measured in the crankcase, and discharge pressures corresponding to a 90° room for air-cooled units and 80° water for water-cooled units, with a water temperature rise not exceeding 18° F. through water-cooled condensers.

Lipman

General Refrigeration Co., Beloit, Wis.

Model Nos.	303S	303L	303H	503S	503L	503H	305S	305H	505S	505H	757S	757H	1007S	1007H
Tons refrigeration capacity (A.S.R.E.)	1.5	...	...	2.28	...	...	1.38	...	2.18	...	3.53	...	4.95	...
Motor size (hp.)	3	3	3	5	5	5	3	3	5	5	7½	7½	10	10
Compressor speed (r.p.m.)	370	420	320	580	650	500	325	280	540	470	390	340	520	450
Bore (in.)	2⅜	2⅜	2⅜	2⅜	2⅜	2⅜	2⅜	2⅜	2⅜	2⅜	3¼	3¼	3¼	3¼
Stroke (in.)	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	4	4	4	4
No. of cylinders	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Compressor displacement (cu. ft. per hr.)	740	840	640	1160	1300	1000	650	560	1080	940	1800	1570	2400	2075
Pump down capacity of receiver (lbs.)	55	55	55	55	55	55	70	70	70	70	95	95	95	95
Quantity of oil in system (gals.)	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	3½	3½	3½	3½
Overall Dimensions (in.)														
Width	44¾	44¾	44¾	44¾	44¾	44¾	44¾	44¾	44¾	44¾	54⅞	54⅞	62	62
Depth	25⅞	25⅞	25⅞	25⅞	25⅞	25⅞	25⅞	25⅞	25⅞	25⅞	33½	33½	37½	37½
Height	30½	30½	30½	30½	30½	30½	30½	30½	30½	30½	33⅜	33⅜	42	42
Net weight of machine (lbs.)	790	790	790	910	910	910	790	790	910	910	1460	1460	1580	1580

* * *

Compressor
Type of system....Open
Type of compressor....Reciprocating
Compressor drive....V-belt
Type of shaft seal....Bellows
Oil level measured by....Sight-glass
Refrigerant used....303 & 503 models—methyl chloride; others—Freon

Condenser and Liquid Receiver
Condenser cooling medium....Water
Type of condenser....Tubular, counter-flow
Location of condenser...Between motor & compressor
Type of liquid receiver....Horizontal, in base
Suction line strainers...Two, one for each pair of cylinders

Materials Used
Condenser tubing....Copper

Valves
Type of suction valves....Ring disc
Type of discharge valves....Ring disc
(Both in same valve plate.)

Special Features
Oil return from high side to crankcase.

ENGINEERING

Moore Demonstrates The 'Hydrocal'

(Concluded from Page 1, Column 2)

transfer of heat through a slab of homogeneous material starting at a uniform temperature, showing that by establishing a temperature difference between surfaces of the slab, the heights of the columns of liquid will indicate temperature gradients through the material.

He also showed how a reduction in temperature on both sides of the slab promptly drops the temperature at each surface, and as the heat stored in the slab is removed, the liquor columns form a convex curve which finally straightens out at the lower level representing the reduced temperature.

Heating both sides acts oppositely, producing a concave curve. Heating one side and cooling the other was also demonstrated, and approached (and in time would have become) a straight line slanting down from the high-temperature to the low-temperature side.

Heat flow problems, Prof. Moore pointed out, can be divided into two general classes, (1) those in which a steady state of heat transfer rates prevails and in which the action continues until it reaches a state of stabilization, and (2) problems of the unsteady state in which heat transfer rates change during the course of the study. The first type of problem is much the easier.

The Hydrocal can be used to imitate hydrodynamically the ability to store heat, the resistance to flow of heat, and temperature gradients, he stated. It is based on the theory that if a pipe is long enough, the rate of flow through it is proportional to the head. Volume of liquid represents quantity of heat, and height of liquid represents intensity of heat, that is, temperature.

It can be used to solve numerous heat transfer problems, he claimed, and is much faster than mathematical methods. He told of working out a heat transfer problem mathematically with two entirely different sets of equations—taking many hours to arrive at the answer—and then working it out with the Hydrocal in just a few minutes with, he asserted, greater accuracy.

Asked why the instrument was not based on an electrical circuit, he said that it would be quite possible although enormous condensers would be required. The chief objection to the electrical method, as he viewed it, is the fact that readings would have to be taken so fast that an oscillograph would be necessary. The time it takes the liquid to assume its levels in the various tubes is thus a definite advantage.

"The less we lean on the hope of mathematics, the farther we will get in heat transfer problems," he declared.

Discussing its application, he mentioned the cooling of a large quantity of chicken salad by refrigeration. In that instance, a number of people were poisoned by the salad in the center of the batch because it took so long for the cooling effect to penetrate to the center that bacteria had multiplied beyond the bounds of safety there. This was easily demonstrated on the Hydrocal.

He portrayed the action of quick-freezing with the instrument, producing a considerable temperature reduction at the edges of the material and allowing the cooling effect to permeate the substance in a short time. Quick freezing has not been applied to heavy cuts of meat such as a side of beef, he pointed out, because these are too thick for the refrigeration to penetrate to the center with sufficient speed.

Those registered at the meeting were:

J. W. Archibald, Temprite Products Corp.; Norman A. Baker, Kelvinator Corp.; George B. Bright, Detroit Ice Machine Co.; F. G. Carter, Detroit Lubricator Co.; F. M. Cockrell, ELECTRIC REFRIGERATION NEWS; R. W. Doeg, Kelvinator Corp.; R. C. Doremus, Detroit Ice Machine Co.; J. B. Fisher, Detroit Lubricator Co.; A. E. Flemming, Chrysler Corp.; J. E. Fleury, Detroit Lubricator Co.; Everett Gleason, Valade Refrigerator Corp.; O. D. Greenlee, Kold-Hold Mfg. Co.; D. P. Heath, McCord Radiator & Mfg. Co.; R. S. Hemmingsen, Johns-Manville Co.; Earl F. Hubacker, Norge Corp.; A. M. Janasik, Kelvinator Corp.; Earl Jennings, Temprite Products Corp.; Phil Johnson, Kelvinator Corp.; Hugh Keeler, University of Michigan; L. S. Keilholtz, Chrysler Corp.; A. E. Knapp, Kelvinator Corp.; R. A. Lennox, Temprite Products Corp.; Elgin O. Marshall, Kelvinator Corp.; W. J. McCloskey, Universal Cooler Corp.; O. S. McGuffey, Kold-Hold Mfg. Co.; C. D. McLaughlin, Kelvinator Corp.; H. B. McLaughlin, Temprite Products Corp.; A. D. Moore, University of Michigan; Wm. Mussing, Kelvinator Corp.; J. E. Naegely, Kelvinator Corp.; O. C. Olsen, Chrysler Corp.; L. C. Oswold, Sparks-Withington Co.; Bruce W. Palmer, Palmer Electric Co.; R. S. Palmer, McCray Refrigerator Co.; Paul D. Parker, Kelvinator Corp.; John T. Schaefer, ELECTRIC REFRIGERATION NEWS; Paul Stefford, Kelvinator Corp.; N. J. Taylor, Chrysler Corp.; B. E. Tiffany, Kelvinator Corp.; George R. True, Detroit Lubricator Co.; A. C. Wallich, Universal Cooler Corp.; Earl P. Wells, Kelvinator Corp.; Dan D. Wile, Detroit Lubricator Co.; John Wyllie, Jr., Temprite Products Corp.; and L. A. Volberding, Norge Corp.

Chicago School to Offer Home Study Course

(Concluded on Page 2, Column 4)

ship, (10) servicing and repairing, (11) the business end of refrigeration and air conditioning (bookkeeping, advertising, collections, etc.), and (12) spare time earn-as-you-learn training.

In the study kit furnished with the first lesson assignments the school provides a Taylor thermometer for making certain experiments in the early training, and for later use in actual practice.

As a student progresses through his training, he is furnished job tickets and engineering data sheets which are placed in a "Refrigeration and Air Conditioning Handbook" — a pocket-size reference book which will contain, when the course is finished, about 150 sheets.

The job sheets give step-by-step instructions for analyzing and performing certain common service operations. The data sheets provide engineering tables for temperature conversion, thermal conductivity of materials, boiling points, freezing points, latent heat values, wire sizes, refrigerant data, etc.

On completion of the first 30 lessons, the student is given a complete set of tools in a tool kit. This includes a Lenk torch, Klein pliers, Crescent wrenches, Miller Falls drills, Nicholson files, cutting and flaring tools, hack-saw, soldering iron, two screw drivers, tube benders, a hammer, level, etc.—over 50 pieces in all.

This is furnished on the theory that the student should practice his instructions as he gets them, according to Ray D. Smith, president.

The institute offers an engineering consultation service to its students, through which a student can ask for any specific information on a technical problem. A vocational service and free employment service are also features of the training. An extract from one of the institute's lessons appears on page 13 of this issue of the NEWS.

Notes

By John T. Schaefer

First Air Conditioning In Egypt

First contract ever awarded for air-conditioning equipment in Egypt has been let to an American manufacturer, according to a report from Commercial Attache C. E. Dickerson which was just released through the Machinery & Agricultural Implements Division of the U. S. Department of Commerce.

The building which will thus start to make Egyptians air-conditioning conscious is the studio of the Societe Misr pour le Theater et le Cinema, located near the Pyramids.

The company which will supply the equipment is unnamed, but the centrifugal refrigeration system is to be used, so most air-conditioning engineers can probably make a guess. Cost of the equipment will be approximately L.E. 6,000 (one L.E. is $4.98 at present exchange rate), including expenses of the engineer who will be sent from this country to install it.

Mr. Dickerson says until two or three years ago air conditioning was practically unheard of in Egypt, but recently some interest has been manifest among owners of public establishments, especially theaters.

Previous to the current award, the most promising opportunity for air conditioning was late in 1932 when the Egyptian government decided to install it in the Chamber of Deputies. At that time a credit of L.E. 6,000 was opened for the purpose and bids invited.

Six British, three German, two Swiss, and one American manufacturer competed in the bid, but the lowest bid was L.E. 6,885 and the highest L.E. 13,830, so the government decided the whole thing was too expensive and dropped the matter.

* * *

Personals

Men change jobs and jobs change men quite frequently in the refrigeration business. Recent movements noted are:

J. C. CHAMBERS, until this spring sales manager of the air-conditioning department of Frigidaire in Dayton, is now with Chrysler's Temperature Corp. in New York City. He carries the title assistant general sales manager and director of engineering.

He is closely associated with another experienced Frigidaire sales manager—H. K. JAMERSON who headed Frigidaire's entire sales operation some years ago. Mr. Jamerson is now general sales manager of Temperature Corp.

Mr. Chambers is a thorough engineer, with a quiet enthusiasm for the future of air conditioning. He traveled many a mile by rail and by air to supervise personally many of Frigidaire's air-conditioning installations throughout the country.

* * *

GEORGE P. MacKNIGHT, polished and efficient secretary of the Porcelain Enamel Institute, has left that organization to become regional director of the Book Manufacturers' Institute, 20 N. Wacker Drive, Chicago. Mr. MacKnight was one of the moving forces in the recent advertising campaign on porcelain refrigerator finish.

* * *

DAVID E. MACCABEE, former research engineer for Frigidaire in Dayton, and more recently in the refrigeration engineering department of Stewart-Warner, is now doing special technical research for Grunow in Chicago. Anyone who reads the patent page of the NEWS will be familiar with his name.

* * *

A. C. WALLICH, for some years head of the Wallich Ice Machine Co., which sold and installed Carrier air-conditioning and industrial refrigeration equipment in the Detroit territory, is now with Universal Cooler.

Mr. Wallich brings to Universal a wide acquaintanceship and experience with heavy tonnage refrigeration, a field which Universal Cooler is embracing more and more with its large methyl chloride and Freon condensing units. He is working with TOM PENDERGAST, commercial sales manager.

* * *

FRANK SLAGEL, former chief engineer of Fedders Mfg. Co. and now representing Fedders and other refrigeration appliance manufacturers on the West Coast, is just completing an extensive tour of eastern refrigeration centers, his first trip east since he went to Los Angeles nearly two years ago.

He reports a very active accessory and parts supply on the West Coast —although it is highly seasonal. During his current trip he has made arrangements to handle additional lines of eastern-made refrigeration products.

* * *

HOWARD CHAMBERLIN, chief engineer of Stewart-Warner's refrigeration department, has left that company. His present address: 508 N. Prospect Ave., Park Ridge, Ill. An expert in testing household electric refrigerators, Mr. Chamberlin wrote a highly informative article on that subject for ELECTRIC REFRIGERATION NEWS when he was director of laboratories for Copeland Products, Inc.

* * *

HARRY THOMPSON, chief engineer of Universal Cooler, and one of the most respected engineers in the industry, has left after a period of service which extends back to the inception of the company—in fact before that.

An inventive fellow working at Kelvinator some years ago under C. C. Spreen (then chief engineer), it was Mr. Thompson who designed a new compressor which he believed to have important possibilities in household refrigeration. He was right, and it did—as the Universal Cooler machine. With Patterson Farmer (first president) he was able to interest capital and start Universal Cooler Corp.

Mr. Thompson is also well known for numerous improvements in commercial refrigeration compressors, and for patenting the thermostatic expansion valve now made by one of the industry's prominent accessory manufacturers.

* * *

ISAAC L. RICE, Jr., who hasn't been in the limelight of the refrigeration business since the demise of his Rice Products, Inc. over three years ago, is now contacting American refrigeration manufacturers to secure recognition of his capillary tube patent and issue licenses on it. He also plans to negotiate with European manufacturers. His office is at 295 Fifth Ave., New York City.

The capillary tube, as you probably know, is a refrigerant expansion device consisting of a coil of fine bore tubing through which liquid refrigerant passes, so that the high-side pressure is gradually reduced to the low pressure of a household evaporator. It was pioneered by Rice, later used in the Servel Hermetic, the Crosley, and as a modified form in Frigidaire standard models.

* * *

E. H. BROWN, former vice president of Copeland Products, Inc., is now exploiting the use of propane gas in portable furnaces and torches built by the Industrial Propane Equipment Corp., Detroit, of which he is president.

The equipment is designed to apply portable heat for a variety of requirements, including the fusion of solder in solder-type refrigeration fittings such as Mueller Brass makes. For further details, watch the NEWS.

* * *

Air-Conditioned Dogs

Heating and Ventilating for November shows a picture of air-conditioned kennels on the sun deck of the United States Liner *Manhattan*. A similar cage is being used by Admiral Byrd to bring back live penguins on his return trip from the south pole.

* * *

White Will Be Worn

The New York Central Railroad has advertised that "white will be worn on the 'Century,'" as the world's fastest long-distance train is completely air conditioned — with all windows closed, and only clean filtered air in circulation throughout the train.

There are also many air-conditioned cars on other "Central" trains operating between New York City and Chicago, Cleveland, Detroit, Cincinnati, Indianapolis, and St. Louis.

Choose ANSUL REFRIGERANTS be sure of high quality

SULPHUR DIOXIDE

A product that has set a standard of comparison for years. Pure and bone dry with every cylinder analyzed to assure highest quality.

METHYL CHLORIDE

Low moisture and acid content guaranteed by analysis of every cylinder. It is fast freezing, stable and non-corrosive.

ANSUL CHEMICAL CO.
MARINETTE - WISCONSIN

Nationwide Coverage

with branch sales offices, motor warehouses, and service stations

Assures Quick Service

when a replacal motor or a motor-part is urgently needed

Above — Location of Wagner's 26 branch offices and service stations.

At Left—Airplane view of the Wagner plant, located at St. Louis, in the center of the U.S.A.

You realize the importance of quick service when a replacal motor or a repair part is needed. So does Wagner—hence, 26 branch offices, warehouses and service stations in all parts of the country. Each service station has a complete stock of motor-parts, available for immediate shipment.

Your customers expect uninterrupted refrigeration, and immediate repairs or replacals when trouble develops. Wagner's nationwide coverage is your assurance that your customers need not be disappointed.

When there's trouble with any make of motor, or any information wanted on motors, get in touch with Wagner's nearest branch.

Wagner Electric Corporation
6400 Plymouth Avenue, Saint Louis, U.S.A.

MOTORS TRANSFORMERS FANS BRAKES

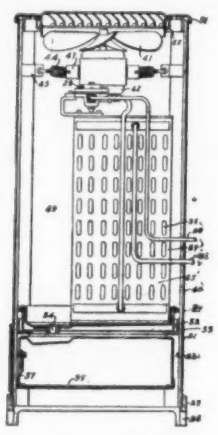
S533-1

PATENTS

Issued Oct. 30, 1934

1,978,460. REFRIGERATING APPARATUS. George F. Hofferberth, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a corporation of Delaware. Application March 7, 1932. Serial No. 597,172. 3 Claims. (Cl. 98—40.)

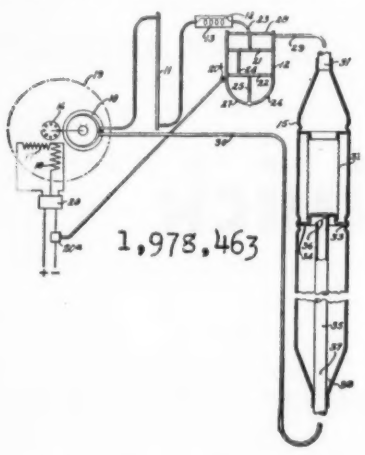
1. An air conditioner including a cabinet having a horizontal wall provided with a discharge aperture, air conditioning means within said cabinet, power driven air circulating means for drawing air into the cabinet, passing it through the air conditioning means and discharging it through said aperture and adjustable air directing means comprising a horizontal grille having a periphery of regular polygonal form and having a plurality of vanes for deflecting the air discharged through said aperture in a direction at an acute angle to vertical and a seat for said grille on said horizontal wall having a shape corresponding to the periphery of the grille, said grille being adapted to be received by said seat in a plurality of positions at acute angles to each other in a horizontal plane while the cabinet and seat remain assembled.



1,978,460

1,978,463. REFRIGERATION. Charles F. Kettering, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a corporation of Delaware. Application Jan. 28, 1933. Serial No. 654,086. 10 Claims. (Cl. 62—115.)

1. A refrigerating apparatus comprising a compressor, a condenser and an evaporator in refrigerant flow relationship,



1,978,463

McCORD
REFRIGERATION
PRODUCTS

COMMERCIAL EVAPORATORS

DOMESTIC EVAPORATORS

CONDENSERS

METLFLEX ICE TRAYS

SPIRAL FINNED TUBING

SPIRAL COPPER FINNED IRON, STEEL OR COPPER PIPE

McCORD
RADIATOR &
MFG. CO.
DETROIT. -:- MICH.

and means interposed between said evaporator and compressor for arresting an abnormal flow of liquid refrigerant while permitting the flow of gaseous refrigerant and the flow of a relatively small quantity of arrested liquid refrigerant into the gaseous refrigerant flowing to the compressor.

1,978,469. REFRIGERATING SYSTEM. Lawrence J. Maringer, Buffalo, N. Y., assignor to R. G. Wright & Co., Buffalo, N. Y. Application Jan. 11, 1932. Serial No. 585,870. 15 Claims. (Cl. 62—3.)

1. In a refrigerating system, the combination of an evaporator in contact with the medium to be cooled, supply means for maintaining said evaporator fully flooded with liquid refrigerant, thermo-sensitive means subjected to the temperature of said medium to be cooled, means controlled by said thermo-sensitive means to regulate the pressure in said evaporator for regulating the temperature of said medium to be cooled, and means also actuated by said thermo-responsive means for closing said supply means to prevent the supply of liquid refrigerant to said evaporator when said medium has been cooled to the desired temperature.

1,978,483. REFRIGERATOR. Carl Meyer Weinheimer, Buffalo, N. Y., assignor to Jennie L. Weinheimer, Buffalo, N. Y. Application Jan. 7, 1932. Serial No. 585,336. Renewed April 7, 1934. 6 Claims. (Cl. 62—89.)

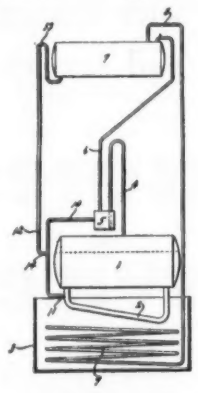
1. In a refrigerator casing adapted to be placed beneath a sink and having a slot in the casing wall in which the waste pipe is contained within the thickness of the wall, of a plate detachably secured in front of the inner face of the slot containing wall and covering the slot.

1,978,508. PROCESS OF REPURIFYING CARBON DIOXIDE GAS. Gustave T. Reich, Philadelphia, Pa. Application April 22, 1932. Serial No. 606,858. 17 Claims. (Cl. 62—121.)

1. A continuous process of producing solid carbon dioxide where liquefied CO_2 gas is expanded to produce snow, which process comprises compressing, purifying the raw gas, recompressing and repurifying the expanded used gas separately from the raw gas and mingling the purified used gas with the purified raw gas while the two are compressed to the same degree of compression, and liquefying and expanding the mingled gases.

1,978,520. REFRIGERATING APPARATUS. Henry E. Willsie, New York, N. Y., assignor to The Union Trust Co., Cleveland, Ohio, a corporation of Ohio. Application May 23, 1931. Serial No. 539,509. 5 Claims. (Cl. 62—120.5.)

1. In an absorption cycle refrigerating apparatus, a still, evaporator and condenser connected to operative series, a



1,978,520

liquid trap interposed in the circuit between the still and evaporator, a gas return line from said trap to the lower portion of said still, and a drain from said evaporator to said still, the lower end of the drain being connected to said gas return line at a point substantially level with the normal level of the liquid in the still.

1,978,546. AIR CONDITIONING DEVICE. Earle D. McCombie, Marquette, Mich. Application Oct. 25, 1933. Serial No. 695,199. 3 Claims. (Cl. 183—22.)

1. In a warm air furnace having a cold air inlet pipe, an air conditioning attachment comprising a boot communicating the cold air pipe with the furnace and having an inclined bottom and a transverse opening in the top next to the furnace, an upwardly tapered crown to said boot, an atomizer plate at the apex of said crown, a spray nozzle immediately beneath said atomizer plate, and an eliminator removably fitted in the opening and having a series of uniformly spaced vertically disposed substantially Z-shaped plates depending within the boot but slightly removed from the bottom of the latter at its lowermost point.

1,978,565. ICE CREAM CABINET. George W. Cocks, Upper Montclair, N. J., and Jacob L. Ginsberg, Brooklyn, N. Y.; said Ginsberg assignor to said Cocks. Application Feb. 9, 1933. Serial No. 655 872. 4 Claims. (Cl. 312—150.)

1. A cold storage cabinet comprising an insulated box having an open top and closed sides and bottom adapted to contain superposed horizontal rows of food receptacles, a plurality of horizontally movable supports for the upper row, there being a blank space in the upper row to permit selective movement of a support in the upper row to expose a desired lower receptacle, cooling means adjacent the interior space, and top covering means exposing when opened, the desired vertical series of receptacles.

1,978,588. BEVERAGE COOLING AND DISPENSING EQUIPMENT. Jesse O. Matteson, Muskegon, Mich., and John Ehrenpreis, Clarence W. Brown, and Robert H. Guyton, Chicago, Ill., assignors to the Brunswick-Balke-Collender Co., Chicago, Ill., a corporation of Delaware. Application Jan. 13, 1933. Serial No. 651,460. 6 Claims. (Cl. 225—1.)

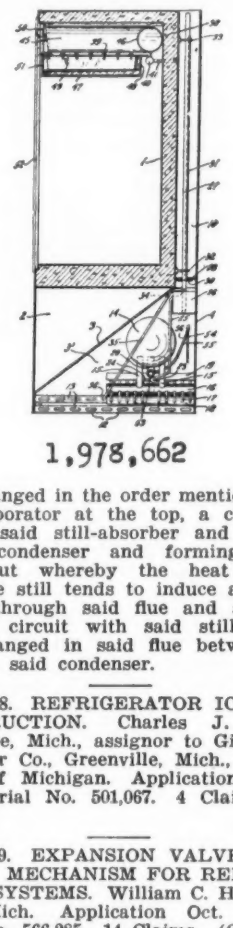
1. A beverage cooling and dispensing apparatus comprising a plurality of interchangeable compartments for bottled and barreled beverages and a common refrigeration means therefor, said refrigeration means being contained in a separate compartment associated with said first-named inter-changeable compartments, said compartment for the refrigeration means also containing means for delivering a fluid under pressure to the barreled beverage, for delivery purposes, together with delivery faucets, and a beverage pre-cooling means inserted in the pipe lines from the barrels to said faucets, said beverage pre-cooling means including a double walled chamber, the inner chamber containing a beverage under pressure and the outer chamber a refrigerant.

1,978,616. LIQUID COOLER. Alvin H. Baer, Carbondale, Pa., assignor to The Carbondale Machine Co., Carbondale, Pa., a corporation of Pennsylvania. Application Oct. 12, 1933. Serial No. 693,378. 14 Claims. (Cl. 257—245.)

1. In a heat exchange device, a unit comprising a series of parallel non-circular walls, fillers between said walls arranged to provide therewith separate continuous labyrinthine passages extending uniformly downward through the unit, means for supplying liquid to said passages at their upper ends, and means for causing a fluid medium of different temperature to act on said liquid while in said passages.

1,978,662. ABSORPTION REFRIGERATING APPARATUS. Edmund E. Allyne, Cleveland Heights, Ohio. Application Feb. 7, 1929. Serial No. 338,174. 13 Claims. (Cl. 62—118.)

1. In refrigerating apparatus, an evaporator, a still-absorber and an air cooled condenser connected in operative cycle



1,978,662

and arranged in the order mentioned with the evaporator at the top, a casing enclosing said still-absorber and said air cooled condenser and forming a flue thereabout whereby the heat effective upon the still tends to induce a draught of air through said flue and a cooling loop in circuit with said still-absorber and arranged in said flue between said still and said condenser.

1,978,708. REFRIGERATOR ICE DOOR CONSTRUCTION. Charles J. Gibson, Greenville, Mich., assignor to Gibson Refrigerator Co., Greenville, Mich., a corporation of Michigan. Application Dec. 9, 1930. Serial No. 501,067. 4 Claims. (Cl. 62—31.)

1,978,709. EXPANSION VALVE REGULATING MECHANISM FOR REFRIGERATING SYSTEMS. William C. Hill, Dearborn, Mich. Application Oct. 1, 1931. Serial No. 566,285. 14 Claims. (Cl. 62—8.)

1. In an expansion valve, a valve member, a valve seat, actuating means for moving the valve relatively to the seat, means connecting the valve member and actuating means, and temperature-responsive means for rendering such connecting means ineffective.

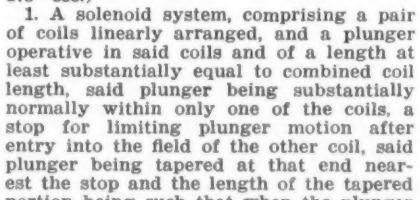
1,978,737. SOLENOID. George D. Bower, Columbia Heights, and Willis H. Gille, St. Paul, Minn., assignors to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware. Application March 23, 1931. Serial No. 524,626. 19 Claims. (Cl. 175—335.)

1. A solenoid system, comprising a pair of coils linearly arranged, and a plunger operative in said coils and of a length at least substantially equal to combined coil length, said plunger being substantially normally within only one of the coils, a stop for limiting plunger motion after entry into the field of the other coil, said plunger being tapered at that end nearest the stop and the length of the tapered portion being such that when the plunger is engaged against the stop the tapered portion extends into the field of the other coil.

19. A pair of solenoid coils, a plunger operable by the coils, a switch, and a control armature for the switch associated with the coils, stop means at the opposite sides of which said plunger and armature operate said switch controlling the circuit to one of the coils, and adapted to be opened as the result of increased magnetic field in that coil, and means by which the circuits are initially sequentially operated, the switch circuit first.

1,978,795. REFRIGERATION APPARATUS. Milton E. Hanson, Collingswood, N. J., assignor to B. F. Sturtevant Co., Inc., Boston, Mass. Application Jan. 7, 1934. Serial No. 706,940. 9 Claims. (Cl. 62—24.)

1. An air conditioning system for a passenger vehicle, comprising an air cooling chamber, means for passing air



1,978,795

through said chamber where it is cooled and into the passenger space of the vehicle, an ice bin for receiving cakes of ice, a thin metal sheet in said ice bin upon which the stored ice cakes rest, means forming a fluid passage having as its upper wall said sheet, means forming a fluid reservoir, a pump and connections for circulating fluid from said reservoir through said passage and to said cooling chamber, and means for draining said passage when said pump is stopped.

1,978,854. AIR COOLING SYSTEM. Samuel M. Anderson, Sharon, Mass., assignor to B. F. Sturtevant Co., Inc., Boston, Mass. Application Jan. 31, 1934. Serial No. 709,119. 7 Claims. (Cl. 257—7.)

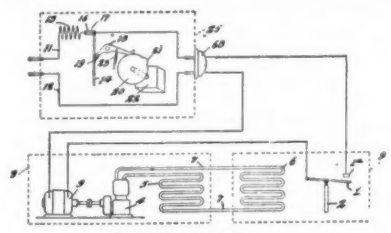
1. Air conditioning apparatus for a passenger vehicle, comprising an air conditioning compartment, means for passing air through said compartment where it is conditioned, cooling coils in said compartment in the path of the air stream passing therethrough, means for supplying a volatile refrigerant to said coils, an auxiliary coil in said compartment, and means for alternatively supplying steam or ice water to said auxiliary coil.

1,978,928. METHOD AND APPARATUS FOR TREATING LIQUIDS. Hosmer L. Blum, San Francisco, Calif. Application July 29, 1932. Serial No. 626,041. 11 Claims. (Cl. 62—174.)

1. The method of making a congealed edible confection which consists in the steps of providing a liquid body in a container, inducing a cycle of flow of liquid from a lower portion of the liquid body, and returning said liquid flow to the upper portion of the liquid body, subjecting said liquid to a refrigerated aeration treatment in transit and removing refrigerated and aerated liquid from the upper level of the liquid body.

1,979,103. AUTOMATIC CONTROL FOR REFRIGERATORS, ETC. Edwin G. Gaynor, Fairfield, Conn. Application Dec. 19, 1931. Serial No. 582,081. 20 Claims. (Cl. 62—4.)

1. In combination, a refrigerator having a cooling unit, an electrical circuit including a motor for supplying refrigerant



1,979,103

to said unit, a pair of switches in said circuit, temperature controlled means for opening and closing one of said switches to provide "off" and "on" periods of refrigeration, time controlled means for opening and closing the second switch to provide a defrosting interval, and means for preventing said second switch from opening when the first switch is closed.

1,979,128. THERMODYNAMIC SYSTEM. Charles B. Watson, Omaha, Nebr., assignor of 45 per cent to Fay G. Johnson, Omaha, Nebr. Application July 29, 1933. Serial No. 682,893. 6 Claims. (Cl. 62—115.)

1. A thermo-dynamic device comprising a cyclic system having means for utilizing the potential energy of an expanding saturated vapor to operate a prime mover and a second cyclic system having means arranged in heat exchange relationship with the first system for condensing the spent vapors into a fluid, said second cyclic system including a condenser having means to cool the same below the operating temperature of said cyclic system.

1,979,142. REFRIGERATOR. Lucian A. Cowan, Jr., Mobile, Ala. Application Aug. 13, 1932. Serial No. 628,730. 2 Claims. (Cl. 62—95.)

1. In a refrigerator, the combination of a thermally insulated cabinet enclosing a food chamber and having a thermally insulated access door leading to said chamber; an evaporator mounted within said food chamber and arranged to be operated at sub-freezing temperatures; a housing of low thermal conductivity completely surrounding said evaporator and enclosing a freezing chamber within said food chamber, said housing having an access opening surrounded by a door jamb thermally insulated from said evaporator, and an access door independent of the access door to the food chamber sealing against said insulated jamb and itself thermally insulated, the thermal conductivity of said housing being such that its exterior will be maintained by the evaporator at a temperature slightly above the freezing point of water; and thermal conducting means attached to the exterior of said housing within said cabinet for increasing its heat transfer surface.

1,979,147. APPARATUS FOR CLEANING BEER COILS OR OTHER PIPES. Emile Dobbelmann and John C. Eide, Minneapolis, Minn. Application Nov. 25, 1933. Serial No. 699,730. 2 Claims. (Cl. 225—12.)

1. Apparatus for cleaning beer coils or other pipes, comprising a base member having depressions therein, a top member, two receptacle members adapted to hold abrasive material interposed between said base and top members with said depressions constituting bottoms for said receptacle members, screens covering the tops of the receptacles thus produced, a pair of passageways in said top members communicating at their inner ends respectively with said receptacles through their associated screens, tubes connected with the outer ends of said passageways, said tubes being adapted for connection with a water supply and for use as a waste pipe, a second pair of passageways in said top member, tubes extending from the inner ends of said passageways down into said depressions respectively, and tubes connected to the outer ends of said passageways, the free ends of said last mentioned tubes being adapted for attachment to the respective ends of the coil or pipe to be cleaned.

1,979,165. REFRIGERATOR DOOR RELEASE. Philip S. McLean, Bloomfield, N. J., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Jan. 21, 1933. Serial No. 652,840. 8 Claims. (Cl. 292—254.)

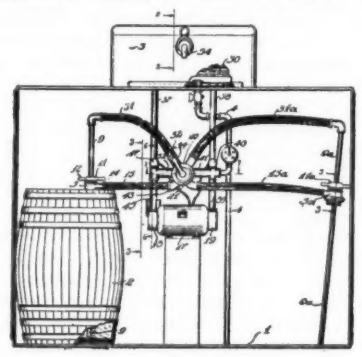
7. A releasing device operable by knee pressure and comprising a substantially vertically disposed lever pivotally hung at its upper end in cooperative relation to a keeper and having an extension projecting angularly inwardly from said point of pivotal support to lift a latch bolt free of the keeper and said lever extending downwardly from said point of pivotal support to within reach of the knee of a user.

1,979,201. METHOD OF EXTENDING THE COOLING ACTION OF ICE. Friedrich Emil Krauss, Schwarzenberg, Germany. Application July 10, 1930. Serial No. 467,111. In Germany May 23, 1930. 3 Claims. (Cl. 62—170.)

1. The method of extending the cooling action of ice with the aid of a salt adapted to lower the freezing point of water, said method consisting in inserting between a layer of the respective salt and the melted ice a layer of a fat having a greater specific weight than water.

1,979,219. BEVERAGE COOLER. Arthur F. Bodine, North St. Paul, Minn. Application July 31, 1933. Serial No. 683,009. 5 Claims. (Cl. 225—1.)

1. A beverage cooling and dispensing device, comprising means adapted to withdraw beverage from a sealed con-



1,979,219

tainer, a cooling coil connected to said withdrawing means, return means adapted to return said beverage to said container, a faucet connected to discharge beverage from said device and pressure means connected to said circuit to maintain a pressure above atmospheric pressure on the beverage in said circuit.

Inland Opens Branch Office in Detroit

DETROIT—Inland Mfg. Co. of Dayton, maker of rubber ice cube trays, has just opened a branch office on the thirteenth floor of the General Motors building here.

SERVICE MEN . . .
do as machine manufacturers do
. . . use Artic
REG. U. S. PAT. OFF.
(DU PONT METHYL CHLORIDE)

Manufacturers of Methyl Chloride refrigerating systems are almost unanimous in their selection of ARTIC. Out of 28 manufacturers of all types of commercial systems, 22 use ARTIC. 9 out of 30 manufacturers of all types of household units use ARTIC for dependable refrigeration.

ARTIC has been a standard refrigerant for over 14 years. Low in moisture and acid contents. Available in all types of standard containers from 34 stock points located throughout the country. Write to an authorized ARTIC distributor for prices and other information.

DUPONT R&H Chemicals
THE R. & H. CHEMICALS DEPT.
E. I. DU PONT DE NEMOURS & CO., INC., Wilmington, Del.
District Sales Offices: Baltimore, Boston, Charlotte, Chicago, Cleveland, Kansas City, Newark, New York, Philadelphia, Pittsburgh, San Francisco

SERVICE

Three Service Valves Used in Checking Household Systems

CHICAGO—The use of service valves on a household refrigerator in taking pressure readings is discussed in work sheet No. 15 in the refrigeration servicing series of the new home training course of the Refrigeration & Air Conditioning Institute (see announcement on page 1 of this issue). In nearly all refrigerators are three service valves, the lesson states, one between the suction line and compressor, another between the compressor and condenser, and a third between the receiver and the liquid line.

Frequently the valve between the suction line and the compressor is called the "suction shut off valve," the one between compressor and condenser is called the "discharge shut off valve," and the one between receiver and liquid line is called the "receiver shut-off valve." These valves may be given other names, but their location in the apparatus does not change.

The divisions of the refrigerating system which are made by the three valves are shown by the diagram in Fig. 1, which also gives the names we shall apply to these valves as we talk about them. The low side valve, which shuts off the compressor crankcase, is usually attached to the compressor. The high side valve, which shuts off the compressor cylinder head, is also attached to the compressor as a general rule. The receiver valve which shuts off the liquid line is attached to the receiver.

Location of Service Valves

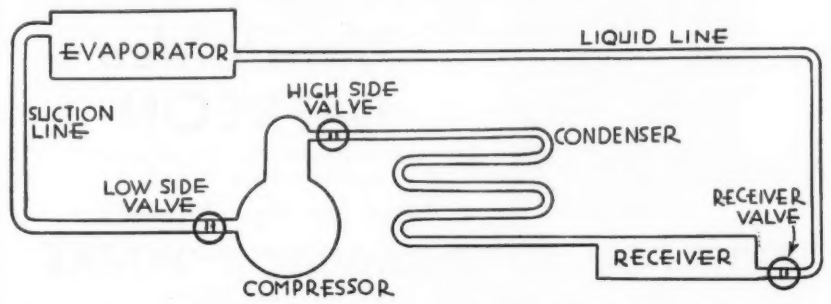


Fig. 1—Positions of service valves in a household refrigerating system.

When gauges are connected to the apparatus, the compound gauge for measuring either vacuum or low pressures is attached to the low side valve, the point in the system at which evaporating pressures can be measured. The pressure gauge for measuring pressures between zero and 200 lbs. or more is attached to the high side valve, because this valve is in position to allow measuring condenser pressure or head pressure.

Service Valve Construction

Service valves used on different makes and models of refrigerators may differ from one another in details of construction. They may require different fittings, and sometimes special connections, for attachment of the pressure and compound gauges. A few units lack the usual type of service valve at one or more of the three regular positions, and then it may be necessary to make the gauge attachment to a threaded opening normally closed only with a pipe plug or threaded cap.

A gauge construction in rather common use, and one which illustrates the action of many of these devices, is shown in Fig. 2. The lower opening of this valve, as shown, is the one attached to the compressor, either at the crankcase or at the cylinder head. The left-hand opening is the one attached to the suction line or to the condenser, depending on where the valve is used.

When the valve stem is turned all the way to the left, or in an anticlockwise direction, the valve is drawn away from the seat "A" and the compressor is open to the suction line or the condenser as the case may be. This is the valve position for normal operation of the refrigerator, since it allows vapor to be drawn into the crankcase from the suction line or allows condensed gas to be forced out of the compressor into the condenser.

Operating Diagram of Valve

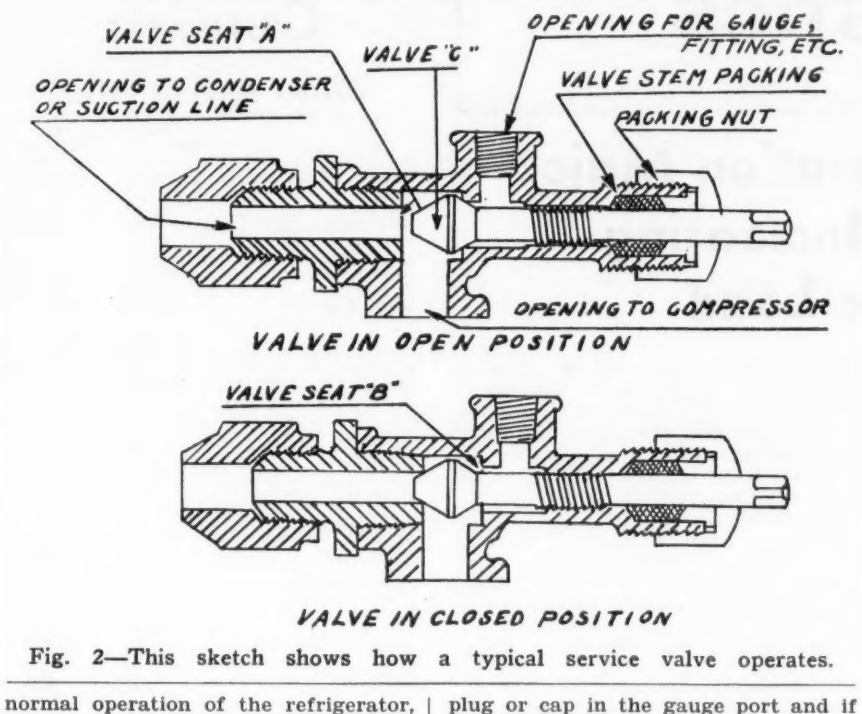


Fig. 2—This sketch shows how a typical service valve operates.

This valve has an additional opening for a gauge, for fittings or other connections. With the valve in the open position it is backed up against seat "B" and the gauge opening is tightly shut off from the compressor and suction line or condenser. If the valve stem is then turned part way in, the compressor still is connected to its regular opening, but it is also connected to the gauge opening at the same time. If the valve stem is turned all the way in or in a clockwise direction while the gauge is attached, the compressor is shut off from the gauge, but the gauge still remains connected either to the suction line or to the condenser.

Thus, with a valve of this general type, we are able to make any connection we desire between the various parts or between the gauge and these parts.

Attaching a Gauge

The first step in attaching either the compound gauge or the pressure gauge is to remove the cap that is usually over the valve stem. Be careful of the sealing washers or gaskets as you do this. Then try turning the valve stem to the normal operating position to make certain it really is tightened in this position.

Turn the valve stem with care because too much force may break it off short. Next remove any plug or cap that closes the gauge opening on the valve. All attachments are made while the valve is in the running position, with the gauge opening sealed off, so that no refrigerant may escape and so that no air can leak into the apparatus.

The next step is to screw the gauge in place. Sometimes you can screw the gauge itself right into the valve opening, but again it may be necessary to use threaded nipples, unions, T's, elbows or other fittings between the gauge and the valve. This depends on the construction of parts.

Do not tighten the gauge into the valve, or do not tighten the fittings at the gauge just yet. Whenever you are handling a gauge that requires extra fittings to attach it to the valve, tighten the parts by using two wrenches, one on the main body of the part being handled and the other on the nut or cap you are tightening. This prevents twisting the fittings.

If the threads are in good condition they should make a secure joint when tightened, but if they are worn and battered it may be necessary to apply a little white lead on tapered pipe threads. Don't let this lead get inside the compressor.

Now, with the connection still slightly loose at the gauge, crack the service valve by turning it in a fraction of a turn for just long enough to let the refrigerant gas push the air out of the connections, and then tighten the nut or tighten the gauge immediately. If you are working on the high side valve, crack it just enough to make the gauge hand vibrate before tightening the connections. Use a solid wrench or fixed wrench for turning the valve stem.

Removing the Gauge

You can start the compressor and read either vacuum or low side pressure on the compound gauge and head pressure on the high side gauge. For some measurements you won't have to start the compressor. When you have completed your readings turn the service valve securely into its running position or turn the stem all the way out to cut off the gauge opening.

The gauge or the fittings may now be loosened, the remaining gas allowed to escape, and the parts removed from the apparatus. Then replace the plug or cap in the gauge port and if washers were there in the first place be sure to put them back. The valve stem packing, shown in Fig. 2, should be tightened by turning down a little bit on the packing nut.

After a valve has been used a great deal this packing may have to be renewed by backing the nut all the way off, replacing the old packing with fresh, and turning the nut down fairly tight. Finally, replace the cap with its washers or gaskets. The connections must be tested for possible leaks before you leave the job. This matter of leaks will be taken up a little farther along.

Using the Gauges

If you are going to attach a compound gauge to the low side of a system using a refrigerant that works under a low side vacuum you must first stop the compressor and then wait at least 15 minutes for the low side pressure to build up to atmospheric or above. This is to prevent a vacuum from drawing air into the system when you open the valve. Such refrigerants include sulphur dioxide, isobutane, ethyl chloride, and butane.

When checking the operating pressure or vacuum with the compound gauge, turn the valve only about one turn in from the normal operating position. If you turn it too far in, you will partially cut off the suction line and the gauge hand will jump as the compressor runs.

When you are checking the head pressure, turn the valve just far enough from the operating position so that the gauge registers the pressure. Turning the valve too far in may cause the gauge hand to jump. The head pressure or high side pressure is affected by the low side pressure or vacuum, and you should check the low side pressure to see that it is zero before making the head pressure measurement.

How To Service Orphan Refrigerators

For the information of service men, detailed authentic instructions for servicing various makes of "orphan refrigerators—published in recent issues of Electric Refrigeration News—are now available. Eleven popular makes are covered in this series. A limited number of extra copies of all 21 back issues containing these articles are available. A package made up of the 21 copies of the News (as listed below) will be mailed postpaid on receipt of $2.00.

Absopure Commercial

Drawings and service data on both Series E and F Absopure compressors, also of the Absopure float, header assembly, oil gauge, discharge and intake valves, and expansion valve. (July 18, 25, & Aug. 1, 1934.)

Allison Household

Detailed service instructions, with views of the two-stage compressor, float valve, flooded evaporator, check valve, etc. of this early household machine using ethyl chloride. Analysis of service calls. (May 30 & June 6, 1934.)

Belding-Hall Electrice

Operating cycle of the high-side float system using sulphur dioxide and the unique ElectrIce gear pump compressor. Drawings of service manifold, cast-iron cooling unit, thermostat, and electrical wiring. (Aug. 22 & 29, 1934.)

Holmes Household

Complete description of the ethyl chloride system built by Holmes Products, Inc. Illustrations of the compressor, float valve, charging valve in three positions, check valve, circuit breaker, and cooling unit, and service helps. (Oct. 10, 17 & 24, 1934.)

Iceberg Household

Service helps on Iceberg self-contained household refrigerators and water coolers, both of which used a reciprocating compressor and methyl chloride. (Aug. 8, 1934.)

Majestic Standard

Operating cycle, section of compressor, suction and discharge valves, float valve assembly, control assemblies, thermostat, and method of installing evaporator illustrated in a series of three lengthy articles on Grigsby-Grunow's conventional "open" type refrigerator. (Sept. 12, 19 & 26, 1934.)

Majestic Hermetic

Detailed description of all the principal parts of Grigsby-Grunow's hermetically sealed units, and instructions for all service operations which may be conducted in the field. (Aug. 16, 1934.)

Rice Household

Data on the Rice household machines in which methyl chloride was the refrigerant. Discussion of common service troubles encountered with the capillary tube. (July 4, 1934.)

U.S. Hermetic

Service discussion of the direct-driven, sulphur dioxide hermetic machine built by the U. S. Radio & Television Corp. Phantom view of the refrigerating unit and electrical wiring diagram. (Aug. 15, 1934.)

Wayne Household

Description of all major parts in the Wayne household machine, and instructions for performing all common service operations. Illustrations of the complete system, double-seated valve assembly, section of the compressor, and expansion valve. (July 11, 1934.)

Welsbach Household

Complete treatise on the Welsbach ethyl chloride household machine, with illustrations of compressor, expansion valve, receiver valve, condenser shut-off valve, compressor inlet valve, thermostat, and two types of Welsbach controls. (June 13, 20 & 27, 1934.)

Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

Radio Service Firm Selling Refrigerator Replacement Parts

NEW YORK CITY — Wholesale Radio Service, Inc., with headquarters here, said to be the largest radio mail order house in the world, is beginning sale of refrigeration replacement parts, its entrance into this field being marked by issuance of a new catalog with one section devoted to refrigeration items.

Included in the refrigeration section of the 192-page publication are household and commercial evaporators, automatic and thermostatic expansion valves, filters and dehydrators, packless valves, gaskets, door gaskets, dehydrated and plain copper tubing, valves and fittings, water valves, controls, gauges, brushes, belts, thermostats, and tools.

A number of prominent makes are represented in Wholesale Radio's refrigeration stock—Mueller valves and fittings, Fedders products, Detroit expansion valves, Tag indicating and recording thermometers, U. S. gauges, Imperial tools, Ansul refrigerants, Gilmer belts, Flexotrays, etc.

A special section is listed, and a special book being issued, on Frigidaire replacement parts.

Brine Tank Leaks Can Be Reduced by Using Non-Leak Compound

DETROIT—Use of an alcohol brine with an automobile radiator non-leaking compound is described by Harvey Matter, service manager of Morley-Murphy Co., Kelvinator distributor in Green Bay, Wis., in the June-July issue of the Kelvinator *Service News*.

Calcium chloride brine was used in cooling tanks up to the 1930 Kelvinator models. As calcium chloride brine tends to have a corrosive action on solder, the tank seams were coated to prevent this action. Despite this, however, some tanks developed small leaks.

Mr. Matter reports that a considerable amount of time and expense can be saved on small leaks by removing the cooling tank, emptying the calcium chloride brine, thoroughly washing the tank, and refilling with alcohol brine to which a can of automobile radiator non-leaking compound has been added.

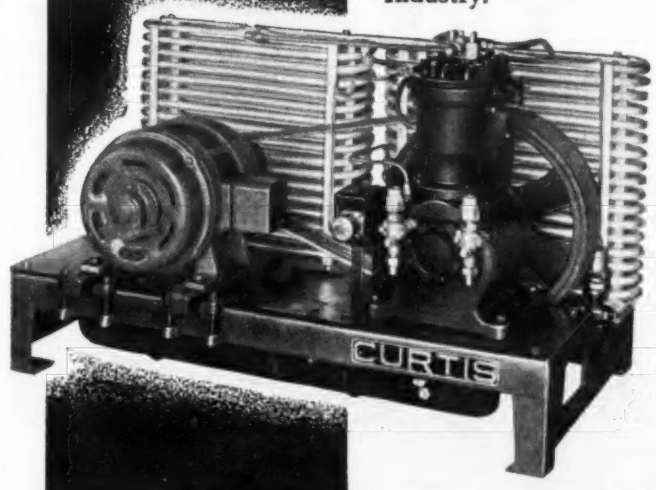
Electrolux Cabinet Tops Ordered from Truscon

CLEVELAND—Servel, Inc. of Evansville, Ind., manufacturer of the Electrolux line, has just placed an order for its entire 1935 requirements in cabinet tops with the pressed steel division of Truscon Steel Co. here, according to an announcement made by Truscon last week. The order will probably total 150,000 pieces, requiring use of several presses 24 hours per day, five days per week, says Truscon.

CURTIS OFFERS

- Fair Policy— *80 Years' Successful Merchandising*
- Quality Workmanship— *40 Years' Building Compressors*
- A Complete Line— *55 Units 1/6 to 10 H.P.*
- Financial Stability— *Highest Capital and Credit Rating Dun and Bradstreet—AaA1*
- Proven Design— *12 Years' Building Refrigeration Units*

Only by building permanently on this complete combination can you expect sure profits in this fast-growing industry.



- Some desirable territories are still open for reliable distributors.

Write for details.

CURTIS

CURTIS REFRIGERATION MACHINE CO.
Division of Curtis Manufacturing Company
1912 Kienlen Avenue, Saint Louis, Missouri
518 H Hudson Terminal, New York City

STATISTICS

Electric Refrigeration Major Factor in Increasing Domestic Load

NEW YORK CITY—Substantial recovery was the outstanding factor in the electric light and power industry for the year 1933 bringing the general activity of the industry back approximately to the 1928 level from the low reached in 1932.

This information was determined by the Edison Electric Institute from some 450 reports from companies and municipal electric plants whose operations represent in the vicinity of 92 per cent of the industry and with information from annual reports of other enterprises, the figures have been prorated and augmented to include 100 per cent of the industry's business. The data are published in Statistical Bulletin No. 1, "The Electric Light and Power Industry in 1933," recently issued by the Institute.

Unusual irregularity characterized the recovery, however, the lowest output of the depression being reached in the first quarter of 1933 followed by a pronounced rise as the use of electrical energy climbed to a peak in July with a mild recession during the remainder of the year.

Electricity sold to all classes of consumers showed an aggregate total of 65,753,608,000 kwh. in 1933, according to the statistical report of the institute, being a gain of 3.1 per cent over 1932 sales, but 12.6 per cent below the total for 1929 when the maximum sales volume in the history of the industry was reached.

Increase In Customers

A noticeable increase in the number of consumers was recorded during 1933 whereas a decrease had been noted in the previous year. The "predepression" peak of 20,218,000 domestic customers was reached in September, 1931 and the low point of 19,699,000 in May, 1933, representing a loss of 519,000 customers. By the end of 1933, 60 per cent of the domestic customers were regained and all losses were picked up by the end of June, 1934, the count at that time being 20,294,276. The table in column three compares the number of domestic customers by states on June 30, 1934 and December 31, 1933.

Small commercial customers reached the peak number of 3,750,000 in January, 1932, and the low point in February, 1933, the loss being about 100,000. About one-half of these were regained during the year and the figure on July 31, 1934 was 3,708,465.

Domestic Service Falls Off

Domestic service in 1933 showed a decrease from the year before for the first time in the history of the electric light and power industry. Falling off in the number of small appliances in use and "doubling up" of families were the chief causes of the downward trend in energy sales. While use of electric refrigerators and radios increased, the increment which they furnished was not sufficient to offset the general retrenchment.

Estimates made as accurately as possible from records of appliance sales and "saturation" figures compiled by various authorities indicate that the outstanding factor in the over-all growth of the business was the signal contribution made by electric refrigerators, according to the analysis made by the Institute.

5,000,000 Refrigerators Owned

As of December 31, 1933, it was estimated that approximately 5,000,000 household electric refrigerators were owned in the United States. The estimates were derived largely from trade papers being based on the summation of annual production of appliances less an estimated replacement demand.

These refrigerators used a total of 2,343,000,000 kwh. during 1933 or an annual average of 575 per refrigerator assuming constant and regular use throughout the year. At an average rate of 4 cents per kwh., the total annual revenue from this energy amounted to $93,720,000. Electric ranges were second in total use of kwh. with 1,750,000,000 which at an average rate of 2.5 cents furnished $43,750,000 revenue.

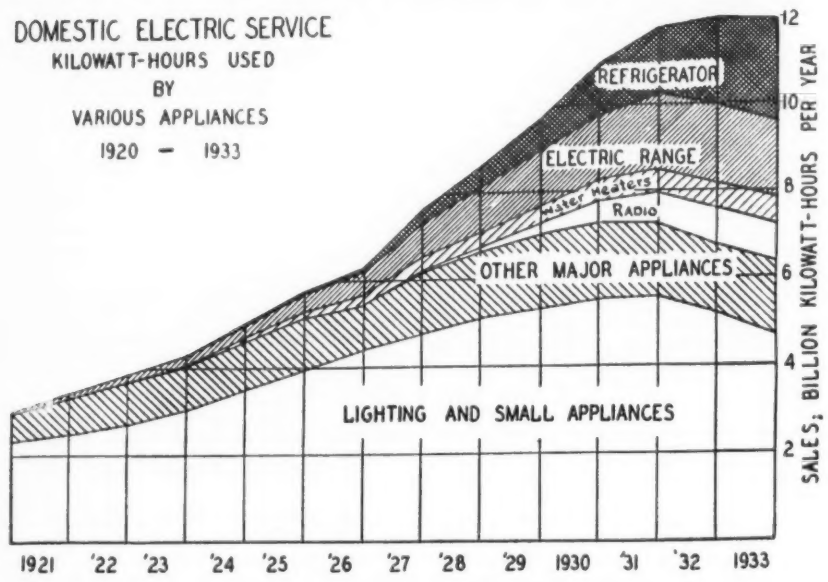
Energy used by socket-type radios totaled 850,000,000 kwh. which at 5.5 cents rate provided revenue amounting to $46,750,000. It can thus be seen that electric refrigerators were responsible for the major share of the electrical appliance load.

Chart Shows Load Factors

The chart shows the kwh. used by various appliances from 1921 through 1933 while the table below shows number of various appliances in occupied homes, number in active service, kwh. used in 1933 and total revenue derived from energy sales during 1933. The table also shows total use of kwh. and annual revenue in 1933 for major appliances compared with small appliances and lighting.

In 1933, about 40 per cent of the energy sold to domestic consumers was used by lamps and a large number of miscellaneous small appliances and the remaining 60 per cent was used by major electrical appliances. The percentages were reversed in 1928 and in 1920, a bare 20 per cent of total kwh. was used by larger appliances. Major appliances in 1933 used a total of 7,250,100,000 kwh. yielding a total revenue of $290,000,000 while small appliances and lighting consumed 4,710,156,000 kwh. with resulting revenue of $366,570,000.

Power Used by Electric Appliances



The above chart, prepared by Edison Electric Institute, shows the sales trend of electrical energy used by various appliances by years since 1921.

No. of Electric Customers

NUMBER OF CUSTOMERS OF DOMESTIC ELECTRIC SERVICE
(Total of Residential and Farm Services)

	On June 30, 1934	On Dec. 31, 1933
United States	**20,461,651**	**20,210,134**
Maine	161,032	157,972
New Hampshire	103,448	101,898
Vermont	66,494	66,109
Massachusetts	981,934	984,473
Rhode Island	160,124	161,472
Connecticut	388,504	384,866
New England	**1,861,536**	**1,856,790**
New York	3,122,250	3,095,758
New Jersey	1,004,109	984,033
Pennsylvania	1,757,863	1,733,556
Middle Atlantic	**5,884,222**	**5,813,347**
Ohio	1,312,871	1,294,190
Indiana	575,381	565,421
Illinois	1,551,559	1,543,001
Michigan	926,111	887,732
Wisconsin	529,680	523,600
East North Central	**4,895,582**	**4,813,944**
Minnesota	400,828	395,883
Iowa	385,431	380,231
Missouri	560,871	556,470
North Dakota	50,330	50,222
South Dakota	65,080	64,342
Nebraska	197,764	195,667
Kansas	284,904	282,530
West North Central	**1,945,203**	**1,925,345**
Delaware	41,457	41,070
Maryland and D. C.	416,033	406,388
Virginia	225,419	220,627
West Virginia	163,218	159,405
North Carolina	222,237	218,858
South Carolina	88,816	87,170
Georgia	174,196	166,190
Florida	189,848	195,798
South Atlantic	**1,521,224**	**1,495,546**
Kentucky	228,426	225,873
Tennessee	201,928	195,664
Alabama	150,152	143,734
Mississippi	71,448	71,354
East South Central	**651,954**	**636,625**
Arkansas	92,932	91,089
Louisiana	163,947	164,836
Oklahoma	215,501	210,631
Texas	549,583	538,071
West South Central	**1,021,963**	**1,004,627**
Montana	70,944	70,997
Idaho	66,915	66,063
Wyoming	26,442	26,217
Colorado	170,111	168,396
New Mexico	27,897	27,753
Arizona	58,297	58,329
Utah	97,985	97,259
Nevada	14,995	14,281
Mountain	**533,586**	**529,295**
Washington	365,418	360,505
Oregon	204,014	200,208
California	1,576,944	1,573,902
Pacific	**2,146,376**	**2,134,615**

Westinghouse Orders Show 50% Increase

EAST PITTSBURGH—Orders received by all divisions of Westinghouse Electric & Mfg. Co. during the nine months ended Sept. 30, 1934, totaled $79,105,881, compared with $52,953,482 in the corresponding period of 1933. This is an increase of 49.4 per cent. Sales billed totaled $69,245,486 compared with $46,562,209 in the first nine months of last year.

Operations during the first nine months of this year resulted in a loss of $363,787, compared with a net loss of $7,083,641 for the corresponding period in 1933. Orders mounted steadily during the first half of this year and notably surpassed 1933 for the nine-months period.

For the quarter ended Sept. 30, orders received totaled $25,213,271, as against $22,547,717 for that quarter in 1933. Sales billed in the third quarter of '34 were $23,963,896, compared with $17,474,213 last year. Loss for the third quarter of this year was $332,062, compared with $1,513,645 for the same period in 1933.

Refrigerator Saturation Low in France

PARIS, France—Progress made in connection with the adoption of electric refrigeration in France is shown by a symposium recently carried through by the French Societe pour de Development des Applications de l'Electricite which indicates that there were 14,080 refrigerators with a total load of 3,384 kw. in use in French households at the end of September, 1933.

It was further shown that 1,157 refrigerators representing 177 kw. were in use in 118 large blocks of flats. Commercial and industrial installations were given as follows: 7,426 refrigerating chambers, 1,516 ice cream coolers, 3,984 cooling chambers, and 176 dairy and other similar installations representing 18,770 kw.

The findings were based on replies received from 150 electricity distribution undertakings, but the figures represent only units reported to the electrical companies and do not include a large proportion of the small refrigerators privately installed in houses.

BUYER'S GUIDE

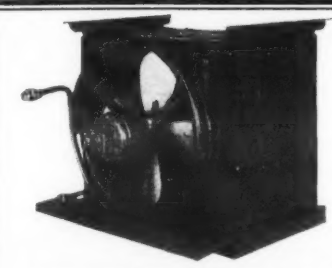
MANUFACTURERS SPECIALIZING IN SERVICE

TO THE REFRIGERATION INDUSTRY

SPECIAL ADVERTISING RATE (this column only)—$12.00 per space.

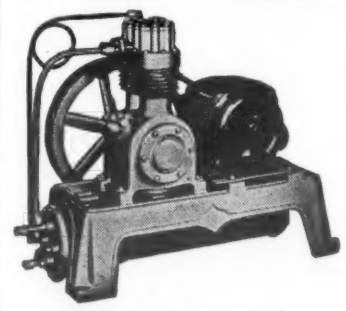
Payment is required monthly in advance to obtain this special low rate.

Minimum Contract for this column—13 insertions in consecutive issues.



KRAMER UNIT COOLERS
Manifolded for **FREON**
and for a greater than 20° differential between air and refrigerant
Send for New Literature
TRENTON AUTO RADIATOR WORKS
Main Offices and Factory, TRENTON, NEW JERSEY
NEW YORK, 210-212 West 65th Street — PITTSBURGH, 5114 Liberty Avenue

KASON HARDWARE
TWO NEW HINGES
No. 1073 .....16" Strap
No. 1077 .....22" Strap
Heavy Duty hinges of finest quality Brass equipped with two case-hardened, ball-bearing washers and an additional supporting lug.
Write for descriptive literature. Samples on approval.
KASON HARDWARE CORP., 61 Navy St., Brooklyn, N. Y.



STARR FREEZE
OUTSTANDING PERFORMANCE
attested by satisfied users — EVERYWHERE!
Sturdy Condensing Units from 80 to 2868 Lbs. I.M.E., and all other commercial refrigeration equipment—Wall type cases with machinery—A beautiful household line of modern, conservative styles—Write for full data.
THE STARR COMPANY
Cable "Starr" — Richmond, Indiana (factory) U. S. A. — Since 1927
1344 S. Flower St., Los Angeles, Calif.
Style EW—Water Cooled With Water Cooled Head

Energy Used by Domestic Electric Appliances

An Estimate for the Year 1933

Appliance	Total Number of Appliances in Occupied Homes On Dec. 31, 1932 (1)	On Dec. 31, 1933 (2)	1933 Average (3)	Per Cent in Use (4)	Total in Active Service (5)	Annual Kwh. Use (6)	Total Kilowatt Hours Used in 1933 (7)	Average Rate Per Kw. Hour (8)	Total Annual Revenue (9)
Flatirons	19,080,000	19,400,000	19,240,000	70	13,470,000	50	673,500,000	5.5¢	$ 37,040,000
Vacuum Cleaners	9,300,000	9,400,000	9,350,000	70	6,545,000	36	235,600,000	5.5¢	12,960,000
Radios (socket only)	13,500,000	15,000,000	14,250,000	70	10,000,000	85	850,000,000	5.5¢	46,750,000
Washing Machines	7,600,000	8,000,000	7,800,000	70	5,460,000	24	131,000,000	5.5¢	7,200,000
Toasters	8,200,000	8,000,000	8,100,000	37½	3,040,000	50	152,000,000	5.5¢	8,360,000
Percolators	5,500,000	5,100,000	5,300,000	40	2,120,000	50	106,000,000	5.5¢	5,830,000
Space Heaters	3,300,000	3,100,000	3,200,000	37½	1,200,000	40	48,000,000	5.5¢	2,640,000
Refrigerators	4,050,000	5,000,000	4,525,000	90	4,075,000	575	2,343,000,000	4.0¢	93,720,000
Ranges	1,100,000	1,140,000	1,120,000	90	1,000,000	1,750	1,750,000,000	2.5¢	43,750,000
Oil Burners	704,000	780,000	742,000	95	705,000	240	169,200,000	5.5¢	9,300,000
Ironing Machines	740,000	768,000	754,000	80	603,000	125	75,400,000	5.5¢	4,150,000
Water Heaters	268,000	268,000	268,000	75	201,000	3,000	603,000,000	2.0¢	12,060,000
Electric Clocks	6,500,000	7,500,000	7,000,000	90	6,300,000	18	113,400,000	5.5¢	6,240,000
Total Above Appliances							7,250,100,000	4.00¢	$290,000,000
Small Appliances and Lighting					19,800,000	238	4,710,156,000	7.78¢	366,570,000
Total, All Domestic Sales							**11,960,256,000**	**5.49¢**	**$656,570,000**

Notes: Columns (1) and (2): Estimates largely from ratios shown in "Electrical Merchandising" and other trade papers being based upon the summation of annual production of appliances less an estimated replacement demand. Column (3): The arithmetical average of columns (1) and (2). Column (4): An estimate allowing for duplicate and unused appliances, houses unoccupied, vacation periods, etc. If these factors are not used and the kilowatthours usually claimed for lighting are added, the grand total will be twice the actual sales of domestic electric service in 1933. Column (5): The product of columns (3) and (4). Column (6): An estimate covering the current taken by appliances in column (5), namely: the kwhrs. consumed by an appliance in constant and regular use throughout the year. Column (8): The 5.5¢ is the average rate paid for all domestic service throughout the United States in 1933; other figures are estimates based upon the average reduction in rates for use of the quantity shown in column (6).

An effort was made to include figures on air-conditioning appliances but no reliable information of any kind could be obtained.

A convenient way to keep your back issues of the News

We offer a binder designed and made especially for keeping your file copies of Electric Refrigeration News neat and always available for ready reference.

It is made of stiff board covers, attractively bound in good quality of black imitation leather. The name Electric Refrigeration News is stamped in gold on the front cover and backbone.

The price is $3.75 shipped to you post paid in the United States and Possessions and Pan-American Postal Union countries. For all Foreign countries, postage based on a shipping weight of 6 pounds must be added to this price. Send your remittance with order. May we send you one?

Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

HENRY
DEHYDRA-TECTOR
For all refrigerants. Easily serviced. Large screen area. Retention spring at inlet holds interior mobile parts in proper position and compensates for expansion and contraction of dehydrant. Any dehydrant can be used. Unless otherwise specified we ship with initial charge of Activated Alumina.
HENRY VALVE CO.
Specialized Valves & Fittings for Refrigeration
1001-19 N. Spaulding Ave., Chicago
WRITE FOR BULLETINS DESCRIBING HENRY REFRIGERATION SPECIALTIES

QUESTIONS

Commercial Sales by States

No. 1938 (Publishing Co., Pennsylvania)—"Do you have any figures which show the sale of commercial refrigerator machines by states or trading areas? Have you also any statistics to indicate the average earnings of a commercial refrigerator salesman, and the average number of units which he sells in a year?

"Anything which you can furnish along these lines will be greatly appreciated."

Answer: There is no record of sales of commercial refrigerating machines tabulated by states or trading areas. Both household and commercial sales reported by member companies to the Refrigeration Division of the National Electrical Manufacturers Association (Nema) are published in ELECTRIC REFRIGERATION NEWS as soon as released. The Association reports sales of household electric refrigerators by states, but does not make such a subdivision for commercial machines.

The 1934 REFRIGERATION DIRECTORY contains all-industry sales of commercial machines by years since 1928. Nema commercial sales by months for 1934 have been published in past issues of ELECTRIC REFRIGERATION NEWS.

On the average, the commercial refrigerator salesman receives from 10 to 20 per cent of the sales price on equipment which he sells. We have no record of the average number of units sold by a commercial salesman in a year.

Minute Man Delivery Car

No. 1939 (Distributor, Tennessee)—"We are very much interested in knowing the name of the manufacturer of the Minute Man Delivery Car which is shown in your paper on page 9 of the October 24 issue.

"Will you please give us the name of the manufacturers of this small trailer."

Answer: See below.

No. 1940 (General Store, Minnesota)—"In your October 24 issue of ELECTRIC REFRIGERATION NEWS you picture a General Electric Minute Man, which many G. E. distributors and dealers are using.

"Would you advise where this trailer can be obtained, the price of same, and any other information you have?"

Answer: The Minute Man Delivery Car is made by the Gabriel Company, 1407 East 40th St., Cleveland, Ohio. Address them directly for prices and detailed information.

Frigidaire 'Restrictor'

No. 1941 (New York) "Please give me the patent number of Frigidaire's 'restrictor' used on their 'standard' models. I want this to find out if a refrigerant metering device, which I developed, would be an infringement on Frigidaire's patent."

Answer: The "restrictor" device used for expanding refrigerant into the evaporator of Frigidaire Standard Models is a variation of the capillary tube expansion element. The capillary tube patent, under which we understand Frigidaire has taken a license from the present owner, Mr. Isaac L. Rice, is patent No. 1,919,500 originally issued to T. E. Carpender.

Tne peculiar screw arrangement which comprises Frigidaire's "restrictor" is covered by patent No. 1,813,979 issued to Frank R. West, and subsequently acquired by Frigidaire.

Frigidaire also has a number of patent applications on *constructional* features of this device, but we are not familiar with any that have yet been granted.

Makers of Air Conditioners

No. 1942 (Automobile Dealer, Ohio)—"It is my understanding that you have available information as to the names and addresses of the concerns who now are actively engaged in manufacturing and selling winter and summer air conditioning.

"If such is the case would appreciate this data at your convenience—thanks."

Answer: A functional directory of air conditioning manufacturers was published on pages 6 and 8 of the September 26 issue of ELECTRIC REFRIGERATION NEWS. This directory listed the functions performed by each manufacturer's equipment together with a brief general description.

Detailed specifications of air conditioners using electric refrigeration were published in the October 31 and November 7 issues of the NEWS.

Directory & Service Manual

No. 1943 (Dealer, Maryland)—"Please advise *by mail at once* when 1935 DIRECTORY will be out and what the price will be.

"Also advise us where we can obtain a general service manual covering household and commercial refrigeration and air conditioning. We mean an authentic one. Please do not refer this inquiry to 1934 DIRECTORY."

Answer: The 1935 DIRECTORY will be ready for distribution about Feb. 1, according to present plans. We have not definitely determined the price but expect to make an announcement very soon.

The 1934 edition was very bulky (692 pages) and indications are that the 1935 edition will be still larger. The price will probably be $5. Until a definite announcement is made, however, we are continuing to accept orders at the old rate.

Regarding a general service manual covering household and commercial refrigeration and air conditioning, we do not know of any book available which meets this demand.

We are actively compiling data for such a Master Service Manual and hope to have it completed sometime next year. A vast amount of editorial work will be necessary to compile a book of this kind and we do not want to make a definite announcement until our work has progressed further.

We have had manuscripts for several service manuals written by various authors submitted to us for publication, but so far we have found none which we would care to endorse.

Furthermore, all members of our staff have been so busy that it has been difficult for us to make rapid progress with several supplementary services which we have in mind.

A NATIONAL FIN COIL SERVICE

NOW! PEERLESS FIN COILS AND REFRIGERATION ACCESSORIES are MANUFACTURED in NEW YORK as well as CHICAGO.

With the opening of a complete factory in NEW YORK the eastern ice machine dealer is assured of the same SERVICE and the same QUALITY that have made PEERLESS NON-SOLDERED RETURN BEND FIN COILS the STANDARD of the industry.

The NEW YORK factory is NOT a warehouse—stocking a few miscellaneous sizes of coils—it is a fully equipped factory, capable of shipping the SAME DAY any one of the 24,576 Fin Coils that compose the PEERLESS line.

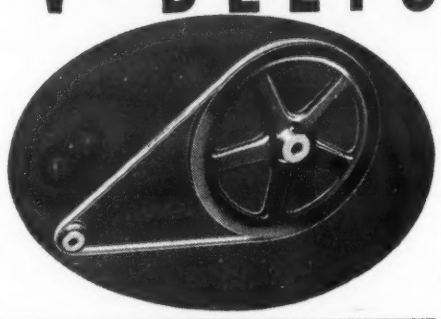
Write—or Wire the nearest PEERLESS factory for your copy of the catalog that will SAVE you money by eliminating useless fin coil Inventories.

PEERLESS ICE MACHINE COMPANY

NEW YORK FACTORY 43-00 36th ST. L.I.C. N.Y.
CHICAGO FACTORY 515 W. 35th STREET—CHICAGO

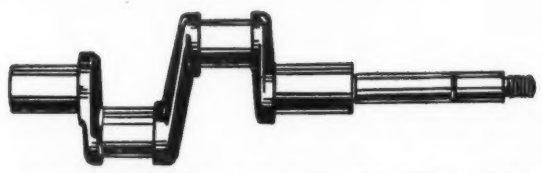
DAYTON V•BELTS

There is a Dayton V-Belt made especially for all makes and types of refrigerators, washing machines and other appliances. A stock is available near you. Send for price list and name of your nearest distributor.



THE DAYTON RUBBER MFG. CO.
DAYTON, OHIO
The world's largest manufacturer of V-Belts

SHAFTS . . . Crank and Eccentric for Compressors, made to YOUR Specifications.



Manufacturers—Send Blue Prints for Quotations.

MODERN MACHINE WORKS, INC.
Specializing in the Manufacture of SHAFTS
2207 Kirkwood Ave. Cudahy, Wisconsin

1934 Refrigeration Directory and Market Data Book

A complete list of manufacturers of refrigeration systems, equipment, parts, materials, supplies, production and service tools, related products, companion merchandise, material handling and delivery equipment, and other devices and service used by the industry. Also detailed specifications of all models of all makes of household and commercial refrigeration equipment and all available statistical data on past sales of refrigeration equipment and the potential future market.

692 Pages, Price $3.00 Per Copy Postpaid in U. S. (Foreign, $5.00)
Business News Publishing Co., 5229 Cass Ave., Detroit, Mich.

RACK'S KOILS KOOL

THE TRADEMARK OF FOUR
PACE SETTERS
IN COIL EFFICIENCY

SUR-E-FEX Fin Coils
FAN-E-FEX Diffusing Units
HUM-E-FEX Non-Dehydrating Coils
AIR-E-FEX Air-Conditioning Units

SEND FOR NEW CATALOG DESCRIBING THESE SENSATIONAL DEVELOPMENTS

REFRIGERATION APPLIANCES, INC.
H. J. KRACKOWIZER, Pres.
1342 WEST LAKE ST., CHICAGO

Subscription Order

Business News Publishing Co.
5229 Cass Ave., Detroit, Mich Date.....

☐ Enter my subscription to Electric Refrigeration News for one year (52 issues). U. S. and Possessions and all countries in the Pan-American Postal Union, $3.00 per year. Canada, $6.00 per year (due to special tariff). All other countries, $5.00 per year (U. S. money).

☐ Enclosed find remittance. ☐ Send bill.

Name .....
Attention of
In Care of .....
Street Address .....City and State .....
We sell the .....refrigerator and .....
(Please indicate other products or principal line of business.)
11-14-34

Exports of Electric Refrigerators

September, 1934, Shipments Reported by the Bureau of Foreign and Domestic Commerce, Washington, D. C.

	Electric Household Refrigerators Number	Value	Electric Commercial Refrigerators Up to 1 Ton Number	Value	Parts for Electric Refrigerators Value
Austria	...	$ ...	...	$ ...	$ 979
Azores and Madeira Islands	...	...	1	200	...
Belgium	42	3,355	30	2,428	3,491
Bulgaria	1	85	...	...	2 0
Czechoslovakia	10	1,282	...	...	2,514
Denmark	1	25	6	1,138	410
Estonia	...	...	...	...	653
Finland	10	1,230	...	...	1,943
France	840	53,153	340	31,747	46,500
Germany	4	473	...	...	3,017
Gibraltar	...	...	...	...	14
Greece	35	3,660	1	192	104
Irish Free State	1	221	76	8.779	2,555
Italy	97	8,950	1	120	7,814
Netherlands	137	9,957	17	2,194	12,699
Norway	3	214	12	1,095	480
Poland and Danzig	...	...	2	268	599
Portugal	15	1,642	...	...	...
Soviet Russia in Europe	1	110	...	...	...
Spain	47	4,480	52	6,720	12,286
Sweden	57	4,129	27	2,190	4,235
Switzerland	58	3,998	19	1,154	6,886
United Kingdom	372	24,346	14	1,501	27,467
Yugoslavia	3	146	...	...	1,122
Canada	36	4,218	10	2,264	25,083
British Honduras	...	...	...	...	7
Costa Rica	10	977	...	...	21
Guatemala	12	1,050	...	...	98
Honduras	52	6,010	1	248	115
Nicaragua	1	142	...	...	...
Panama	101	14,486	7	1,447	2,879
Salvador	8	1,284	...	...	156
Mexico	185	14,621	14	2,677	7,945
Newfoundland and Labrador	1	133	...	...	90
Bermudas	50	4,941	1	332	3?7
Barbados	8	580	...	...	11
Jamaica	17	2,526	...	...	112
Trinidad and Tobago	7	531	...	...	54
Other British West Indies	7	627	...	...	16
Cuba	193	20,578	21	2,557	1,622
Dominican Republic	5	305	1	104	235
Netherland West Indies	35	3,512	4	902	100
French West Indies	11	1,168	...	...	13
Haiti, Republic of,	5	613	1	208	8
Virgin Islands of U. S.	3	475	1	549	...
Argentina	416	24,496	214	11,822	18,369
Bolivia	1	206	...	...	...
Brazil	1,065	76,126	47	5,047	7,116
Chile	7	632	...	...	470
Colombia	68	6,910	3	1,267	1,074
Ecuador	12	1,012	...	...	5
British Guiana	9	882	...	...	164
Surinam	5	599	...	...	20
French Guiana	2	397	...	...	57
Peru	37	3,491	16	2,332	186
Uruguay	135	7,647	26	1,787	1,095
Venezuela	108	10,341	4	1,888	409
Aden	...	...	...	...	40
British India	246	21,159	12	1,235	6,187
British Malaya	130	14,927	1	91	5,151
Ceylon	10	920	1	146	810
China	61	4,164	2	496	12,898
Netherland India	82	8,764	12	2,992	2,159
French Indo-China	1	134	...	...	24
Hong Kong	21	2,170	...	...	1,546
Iraq	...	...	...	...	19
Japan	8	1,251	8	1,443	1,166
Kwantung	17	2,415	3	344	437
Palestine	37	3,939	18	1,526	2,644
Philippine Islands	74	6,309	6	2,608	1,221
Siam	4	281	1	195	8
Syria	3	575	1	410	118
Turkey	5	510	2	236	497
Other Asia	11	2,683	...	...	...
Australia	698	51,650	6	1,817	20,365
French Oceania	8	709	...	...	206
New Zealand	175	11,893	17	1,350	2,150
Belgian Congo	1	146	1	158	748
British East Africa	1	111	...	...	491
Union of South Africa	3,026	288,666	53	8,977	23,151
Other British South Africa	24	2,064	...	...	285
Gold Coast	5	640	...	...	269
Nigeria	1	191	...	...	95
Other British West Africa	...	...	...	...	13
Egypt	29	3,248	11	936	1,072
Algeria and Tunisia	41	3,367	5	890	5,584
Other French Africa	19	1,980	...	...	63
Italian Africa	9	1,011	...	...	...
Morocco	9	653	1	500	974
Mozambique	28	2,781	3	320	223
Other Portuguese Africa	4	342	...	...	...
Canary Islands	72	6,250	6	496	265
Other Spanish Africa	7	534	...	...	200
Total	**9,213**	**$779,409**	**1,139**	**$122,423**	**$296,045**
Shipments to Hawaii	582	61,399	29	5,166	7,046
Puerto Rico	107	10,499	11	2,650	2,415

CLASSIFIED

RATES: Fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

POSITIONS AVAILABLE

WE WANT a sales engineer contacting commercial refrigerator dealers in the South or Central West to devote part time to establishing dealers for a new proven refrigeration accessory. Will not conflict with your present line. Must have successful record as to honesty and ability. Salary and commission. Box 649.

POSITIONS WANTED

FIELD MAN, Sales Engineer, and Branch Manager with 15 years experience with oil burners, household and commercial refrigeration, and air conditioning. Can handle sales training, installation, and service. Has unusual record as field supervisor, district sales manager, and branch manager. Has been with major electric refrigeration manufacturer for 10 years. Box 647.

RENTING AND QUOTATIONS WANTED

WANT to rent office space and desire quotations from well equipped plant having ample assembling, drying and testing facilities to build ice machines. We are developers of new sealed compressors, water coolers, small compact refrigerating systems, with orders available. Our credit okay. Location near Detroit preferred. Box 648.

EQUIPMENT FOR SALE

FOR SALE—Used Copeland, Electrolux, Frigidaire, and Kelvinator Household and Commercial Refrigerators at low prices. Dealers and Service Men contact with us. We sell refrigerators as is, re-condition and spray them yourself and save money. Export. Pilgrim Refrigeration Co., 43-47 39th Place, Long Island City, N. Y. Cable Address "Pilgrimice."

HEAVY Compressors for Sale: Large Chicago distributor wishes to dispose of used 1 to 10 H.P. Compressors taken in trade. F.O.B. Chicago. Examples: 5 H.P. Peerless condensing unit complete with motor and controls—$120.00. 7½ H.P. Frick complete with lowside and brine pump—$185.00. L. H. Rykken, 3434 Nordica Ave., Chicago, Ill.

INDEPENDENT SERVICE COMPANIES

HALECTRIC thermostat repair service. B & B, G.E., Cutler-Hammer, Penn, Ranco, Tag., etc. Float valve needles reground and polished. Expansion valves repaired. Gas service, Ethyl, Methyl, Iso-Butane, Sulphur. Your cylinder or ours. Competitive prices. Distributors of "Flawless Brand" tubing. Halectric Laboratory, 1793 Lakeview Road, Cleveland, Ohio.

ALLELECTRIC:—Rebuilding and supplies. All standard make compressor units, bodies, floats, motors, etc., rebuilt with genuine replacement parts. Our shop is equipped with modern machinery; we now reface old shafts, seals, etc., equal to new. Quick service—lowest prices—all labor and material guaranteed. Price list mailed to dealers on request. Allelectric Refrigeration Service Co., Inc., 451 East 163rd St., New York City.

SCHOOLS

MEN: If you are mechanically inclined, have fair education, and can see the future in Refrigeration and Air Conditioning, we can train you in spare time. Small fee includes Instruction, Consultation, and Employment Service, also tools. Dr. O. F. Schoeck School of Refrigeration, Alton, Ill. EMPLOYERS: We can furnish trained men in your vicinity.

Trained Men Available

When in need of practical, trained shop mechanics, installation or service men, patronize this FREE placement Bureau. We have competent, trained graduates available in every locality, to meet your requirements. With or without experience. No charge to the men or to you. Write, phone or wire.

Utilities Engineering Institute
Placement Division
Wells at Kinzie Street, Chicago

WANTED

Sales Managers
Dealer Contact Men
Experienced Retail Salesmen

We believe we can place a few high grade experienced Refrigeration Men with some of our larger distributors who are expanding their Kelvinator activities.

Application by letter only, giving experience, references, etc., to Kelvinator Corporation, Detroit, Michigan.

TEMPRITE
Instantaneous Cooling
"The leading cooler for water, beer and other beverages"
Write for Catalog
Temprite Products Corporation
(Formerly Liquid Cooler Corporation)
1349 Milwaukee East :: Detroit